



EUROPE REGION

World Confederation
for Physical Therapy

Active and Healthy The role of the Physiotherapist In Physical Activity (Briefing Paper)

**ADOPTED at the
General Meeting 17-19 May 2012
St. Julian's, Malta
Noted at General Meeting 8 - 10 May 2014
Copenhagen, Denmark
For Noting at General Meeting 21- 23 April 2016
Limassol, Cyprus**

European Region of the World Confederation for Physical Therapy (WCPT)

Professional Issues WG

SECTION 1

1.	Physical Activity, Health Promotion and the Role of the Physiotherapist Introduction	5
2.	Physical activity	9
	2.1 Effects of Physical Activity	10
	2.2 Recommended levels of Physical Activity	11
3.	Physiotherapy and Physical Activity	15
4.	Health Promotion	17
	4.1 Health Promotion and the Settings Approach	17
5.	Physiotherapy, Health Promotion and Physical Activity	18
6.	Physical Activity for well-being, disease prevention and treatment – the evidence	20
	6.1 Client Groups	20
	6.2 Physical Activity in disease and treatment	23
7.	Conclusion	31
8.	Authors and Acknowledgments	31

SECTION 2

9	How the ER-WCPT and Member Organisations promote Physical Activity and the Role of the Physiotherapist in Physical Activity and Exercise	33
10.	Appendices	49
	Appendix 1	49
	Appendix 2	51
	Appendix 3	55
	Appendix 4	58
11.	References	61

Executive Summary

The European Region of the World Confederation for Physical Therapy (ER-WCPT) has developed this briefing paper as a resource for Member Organisations (MOs) to use when outlining how Physiotherapists are best placed to prescribe physical activity programmes for individuals and groups in the areas of prevention, maintenance, promotion and treatment across the lifespan.

The document demonstrates how physiotherapists, as specialists in both exercise and health promotion, are in an ideal position to influence the health of the individual. It also outlines how, as a result of the above, the ER-WCPT and its individual Member Organisations are appropriately positioned to impact on the health of the European population through promotion of physical activity and advocacy in relation to public policy.

This briefing paper is intended as a resource for the ER-WCPT and its individual Member Organisations (MOs). It serves to assist the ER-WCPT in influencing the EU to include physical activity in all European efforts to improve population health. It also serves to assist individual MOs within Europe in supporting and advocating their governments, government departments and local authorities in regard to the compelling need for the inclusion of physical activity in all public efforts and programmes to improve lifestyle and reduce morbidity from Non Communicable Diseases.

The major documents supporting the approach used in this Briefing Paper are

- The World Confederation for Physical Therapy Policy: Physical Therapists as Exercise Experts across Lifespan (2011)
- WHO: The Ottawa Charter for Health Promotion (1986)
- WHO: Global Recommendations for Physical Activity for Health (2010)
- Global Advocacy Council for Physical Activity: The Toronto Charter for Physical Activity – A Call to Action (2010)
- European Year for Active Ageing and Solidarity between Generations 2012 – Everyone has a Role to Play (2011)

GLOSSARY of Terms and Definitions

Member Organisation (MO); the professional body of each European country that is recognised by the ER-WCPT

Physical activity and exercise are used interchangeably

Physiotherapy and Physical Therapy are used interchangeably as per the WCPT policy on titles (1995, 2011).

Non Communicable Diseases (NCDs) replaces the previously termed *lifestyle related diseases*.

1. Introduction

“All parts of the body which have a function, if used in moderation and Exercised in labours in which each is accustomed, become thereby Healthy, well-developed and age more slowly, but if unused and left idle, They become liable to disease, defective in growth and age quickly”
Hippocrates (460-370BC)

The importance of the role of physical activity in disease prevention and health promotion is well documented¹. There are strong recommendations for the intensity and frequency of physical activity that everyone should aim to achieve throughout the lifespan to maintain health. Being active and keeping active are important whether one is young or old, able bodied or disabled, male or female. Physical activity and exercise not only maintain fitness, they also improve mental health.

Physiotherapists specialise in developing and maintaining people’s ability to move and function throughout their lifespan. Having an advanced understanding of how the body moves and what prevents it from moving well; physiotherapists promote wellness, mobility and independence. As exercise experts, especially in the treatment of long term and chronic conditions, physiotherapists provide services for a wide range of people to optimise their physical activity. They prescribe exercise as part of a structured, safe and effective programme.

In addition to the above role, physiotherapists collectively can assist in the reversal of the growing global epidemic of lifestyle related diseases (now known as Non Communicable Diseases, NCDs). Such conditions can often be prevented and treated with exercise. Physiotherapists as the health professionals with expertise in prescribing exercise for health can significantly contribute to reducing the global burden of morbidity and mortality of such diseases. As members of the multidisciplinary team, physiotherapists collaborate with relevant health professionals to implement holistic programmes to address this global epidemic.

Physical inactivity is now identified as the fourth leading risk factor for global mortality. In many countries, levels of physical inactivity continue to rise having detrimental effects on the health status of the population². The benefits of regular physical activity on primary and secondary prevention of several chronic diseases are well recognised and now widely established^{3,4}. These diseases account for nearly half of the overall global burden of disease. It is estimated currently that of every 10 deaths, 6 are attributable to Non Communicable Diseases⁵. Physical inactivity is estimated to be the main cause for approximately 21–25% of breast and colon cancers, 27% of diabetes and approximately 30% of ischaemic heart disease burden⁵. In the ‘2008 Physical Activity Guidelines for Americans’, authors reported strong evidence on the benefits of physical

activity for lowering the risk of all cause mortality, coronary heart disease, stroke, hypertension, adverse blood lipid profiles, type 2 diabetes, metabolic syndrome, obesity, depression, colon cancer and breast cancer². The authors also reported the positive relationship between physical activity and an improved cardiovascular and strength fitness and better cognitive function. These health benefits are seen in children, adolescents, adults, older adults, women and men, people of different races and ethnicities and people with disabilities and chronic conditions². As a result of this overwhelming evidence for physical activity, over the last decade the focus of the scientific community has moved from finding correlations between physical activity and health status, to now identifying evidence for optimal doses^{6,7,8}.

There are socio-cultural differences when it comes to who is physically active. A Norwegian survey (2007) found that well educated and high income groups were more physically active than others, and women were more active than men⁹. However, a survey of health enhancing physical activity showed that men were 1.6 times more likely to meet the target than women¹⁰. A systemic literature review of participation in physical activity and exercise in Greece (2007) showed a more active engagement compared with low activity in the last two decades of the twentieth century. Influencing factors included gender, income, type of work, marital status and educational background¹².

European Governments and their health systems have to perform a difficult balancing act; responding to increasing demands on health services from an ageing population, at a time of severe economic constraint. The European Union's *Health Strategy* for 2008-13 aimed at fostering good health in an ageing European population by promoting good health throughout the lifespan. Many countries in Europe have promoted the importance of improving their nation's health. The White Paper "*Prescription for a Healthier Norway*" and the subsequent action plan for physical activity 2005-2009¹³ highlighted the importance of physical activity. Ireland's national guidelines on Physical Activity *Get Active Ireland* 2009 aimed to increase physical activity levels among all groups of the population.¹⁴ The national campaign *30minutesofmovement* in the Netherlands (2007-2010) aimed to stimulate exercise and sport with a focus on several target groups e.g. older people and people with chronic illnesses¹⁵ In the UK, the Government's *Change4Life* campaign (2009) aimed to improve the nation's health and fitness¹⁶. A UK-wide document *Start Active, Stay Active*¹⁷ outline guidelines on the volume, duration, frequency and type of physical activity required across the lifespan to achieve general health benefits. It included guidelines for specific population ages including children under five. It is aimed at the health service, local authorities and a range of other organisations designing services to promote physical activity. It is intended for professionals, practitioners and policymakers concerned with formulating and implementing policies and programmes that utilise the promotion of physical activity, sport, exercise and active travel to achieve health gains¹⁸.

The NICE guidance³³, for professionals in the health service, local authorities and the voluntary sector, focuses on four methods of getting adults to be physically active:

- (i) Brief interventions – advice delivered by GPs and other non-hospital-based health professionals
- (ii) Exercise referral schemes- referral to a tailored physical activity programme
- (iii) Pedometers – use of a device to measure how far you have walked
- (iv) Walking and cycling schemes

The focus of all these governments' campaigns is public health, with increasing efforts on preventative measures and reducing the need for treatment of Non Communicable Diseases such as obesity, high blood pressure and diabetes. The increased incidence of such diseases has been seen in the context of changing lifestyles over time. A fundamental cause of this trend is believed to be that people's everyday activity has been significantly reduced compared to previously. A study of health enhancing physical activity across Europe (2006) (using the International Physical Activity Questionnaire, (IPAQ) found that over two-thirds (71%) of the adult population are insufficiently active to acquire optimal health benefits. Sufficient physical activity for health enhancement ranged from 44% of the population in the Netherlands to 23% in Sweden¹⁰.

Emerging estimates from European studies suggest that physical inactivity costs €300 per citizen per year (WHO, 2006). In 2007, the WHO adapted figures from British Columbia to estimate that the economic cost for a population of 10 million where half the population is too inactive to enjoy health benefits from regular physical activity would be €910 million per year¹¹.

Many governments in Europe have introduced schemes, which provide the patient with lifestyle guidance, advice on change of diet and provide recommendations for increased physical activity. The Norwegian Government launched the "Green prescription" scheme in 2003. The purpose of this scheme was to change the medical treatment of type 2 diabetes and high blood pressure, so that lifestyle interventions could be an alternative to prescription drugs. The scheme has been extended for people with a range of conditions including cardiovascular and respiratory diseases. The scheme to provide the patient with lifestyle *exercise on prescription* has been introduced in the Netherlands and the UK. In the Netherlands the scheme is expected to be covered by basic health insurance in 2011. A summary of existing research¹⁹ shows that it is possible to increase the activity level in the population, but that professional follow-up of individuals is important.

Franklin (CSP 2011) states that "Exercise is medicine and for the approximately 70% of adults who do not meet contemporary physical activity guidelines, the prescription remains unfilled"²⁰.

Physiotherapists have a role in advising and assisting the population to use physical activity to keep active and keep healthy. Their specific knowledge of function, movement, specific exercise and activation with knowledge of the effect of disease and disability on function is central in exercise prescribing. Physiotherapists have a comprehensive understanding of the concept of physical activity and use physical activity in various ways, at different levels and within diverse work areas. As members of multidisciplinary teams, physiotherapists work with other health professional colleagues to contribute to address the impact of Non Communicable Diseases.

2. Physical Activity

This chapter covers the definitions of physical activity and fitness as well as outlining the different types of fitness and how fitness can be measured. The physiological benefits of exercise are explained. The chapter concludes with recommended physical activity levels. These include the broad WHO recommendations for children, adults and older adults as well as the more specific recommendations by the UK Chief Medical Officer.

Physical activity is an overarching concept which is expressed in many forms, for example; play, physical education, daily activities including walking, going up and down stairs, cycling to work, walking the dog, movement activities, exercise, and sports. Physical activity can be defined as *"all physical motion produced by skeletal muscles resulting in a substantial increase of energy consumption beyond the normal level"* ²¹. Moderate physical activity is defined as an activity that requires three to six times as much energy as the energy used at rest. Exercise is physical activity that is planned, structured and repeated, aiming to improve or maintain physical fitness²².

A common international definition of physical fitness is "a set of properties a person has or acquires themselves that can be related to the ability to perform physical activity"²³. Physical fitness can be divided into factors such as aerobic capacity, various forms of muscle strength, agility, speed, coordination and responsiveness and technical skills. These factors can be trained specifically and have significance for sporting achievements, but also impact upon the ability to perform daily life functions.

Measuring Fitness

The "Borg CR10 Scale®²⁴", is used now as a way of measuring overall ratings (R) of perceived (P) exertion (E) including breathlessness and muscle fatigue instead of the RPE-scale, in clinical tests and in training of muscle strength. It is constructed to grow linearly with work load and thus also with heart rate and oxygen consumption during common aerobic tests of functional capacity. It is used both when testing healthy people and to monitor exercise intensity in rehabilitation e.g. people with cardio-pulmonary diseases and when prescribing exercise, e.g. as therapy in chronic disease as well as in sports and in training of athletes²⁵.

The Borg Scale

6	No exertion at all
7	
8	Extremely light
9	Very light
10	
11	Light
12	
13	Somewhat hard
14	
15	Hard (heavy)
16	
17	Very hard
18	
19	Extremely hard
20	Maximal exertion

Borg-RPE-skalan® © Gunnar Borg, 1970, 1985, 1994, 1998 Reprinted with kind permission of Gunar Borg.

2.1 Effects of Physical Activity

Physical activity has a proven beneficial effect both in the prevention and treatment of several disorders, such as musculoskeletal ailments, mild to moderate depression, cardiovascular disease, type 2 diabetes, obesity, and several of the most common forms of cancer²⁶. Physical activity in the form of exercise can have a beneficial effect on the pain experience for people with chronic pain²⁶. Physical activity in children and young people can improve self esteem²⁷, reduce anxiety and depression and improve motor skills²⁸.

Metabolic activity is increased during and after physical activity, and increases with increasing exercise intensity²⁹. Consumption of energy in the muscle is proportional to work intensity. At low intensity energy is recovered in roughly equal parts from carbohydrates and fats. More intensive work is fuelled only by carbohydrates. The highest consumption of fat occurs at a work intensity of about two-thirds of maximum. The longer the duration of the activity, the greater is the proportion of fat consumed³⁰. Training programmes to reduce risk factors ideally consist of five sessions per week of at least one hour at 50-65% of maximum³¹.

The effect of physical activity or exercise is dependent upon the type of activity intensity, duration and frequency (See Table 1). The preventive effect increases with increasing activity, but is not linear. The greatest beneficial effect is achieved in those who are initially in the worst physical shape, for example; people that are inactive or have been immobilised over time. This means that the expected improvement will always be dependent on the person's starting point³².

Table 1 Different kinds of physical activity confer different effects in terms of flexibility, strength and endurance. The table below shows the effect of some forms of physical activity on these three main aspects of fitness.

	Flexibility	Strength (muscle)	Endurance (cardio-respiratory)
Swimming	***	***	***
Cycling	*	**	***
Running	*	**	***
Aerobic Classes	**	**	***
Dancing	**	**	***
Squash	***	**	**
Football	**	**	**
Housework	**	**	*
Judo/karate	**	**	*
Climbing stairs	*	**	**
Walking briskly	*	*	**
Tennis	**	**	**

2.2 Recommended levels of Physical Activity

The general recommendations for physical activity in relation to health promotion and disease prevention, is 30 minutes of daily activity of moderate intensity for adults. This is to maintain blood pressure as well as muscle power and joint mobility to reduce the risk of conditions such as heart disease, overweight and type 2 diabetes and colorectal cancer³².

The WHO published new guidelines for physical activity in different age groups in 2010⁴. The NICE Guidance³³ targets more specifically e.g. children aged up to 11 years and girls and young women from 11-18 years. The Chief Medical Officer for the UK¹⁷ also targets more specifically e.g. children under 5 years and children of pre-school age who are capable of walking unaided.

Adults

In every European country there are programmes available to adults who want to stay in shape, or increase their physical capacity, depending upon the requirements of the different user groups. In addition, thousands of adults and children take part in self-organised activities.

The WHO recommendations for physical activity for adults aged 18-64 years (2010)⁴

In adults aged 18-64 years, physical activity includes leisure time physical activity, transportation (e.g. walking or cycling), occupational (i.e. work), household chores, play, games, sports or planned exercise, in the context of daily, family and community activities.

The recommendations in order to improve cardio-respiratory and muscular fitness, bone health and reduce the risk of Non Communicable Diseases and depression are:

1. Adults aged 18–64years should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate - and vigorous-intensity activity.
2. Aerobic activity should be performed in bouts of at least 10 minutes duration.
3. For additional health benefits, adults should increase their moderate intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate - and vigorous-intensity activity.
4. Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

Older Adults

Between 2008 and 2060 the population of the EU aged 65 years and over is projected to increase by 66.9 million. The numbers of people in the 80 years+ age group will be the fastest growing segment of the population³⁴. The elderly population will increase demand on every country's health system. For this reason it is economically important that older people are self-sufficient and can remain in their own homes and avoid long stays in hospitals and convalescent homes.

Lower levels of physical activity in older adults are likely to lead to a decline in cardiovascular fitness and muscular strength⁷. This decline may result in older adults falling below a threshold for independence. The projected figures for 2060 for adults over 65 and combined with the tendency to lower levels of activity makes it imperative to encourage adults to continue to engage in physical activity to maintain independence and quality of life by adding life to years.

The WHO recommendations for physical activity in older adults (2010)⁴

In older adults of the 65 years and above age group, physical activity includes leisure time physical activity, transportation (e.g. walking or cycling), occupational (if the individual is still engaged in work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities.

The recommendations in order to improve cardio respiratory and muscular fitness, bone and functional health, reduce the risk of NCDs, depression and cognitive decline are:

1. Older adults should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity.
2. Aerobic activity should be performed in bouts of at least 10 minutes duration.
3. For additional health benefits, older adults should increase their moderate intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate-and vigorous-intensity activity.
4. Older adults, with poor mobility, should perform physical activity to enhance balance and prevent falls on 3 or more days per week.
5. Muscle-strengthening activities, involving major muscle groups, should be done on 2 or more days a week.
6. When older adults cannot do the recommended amounts of physical activity due to health conditions, they should be as physically active as their abilities and conditions allow.

Children

It is recommended that children should be physically active at a moderate intensity for at least one hour every day. Moderate intensity means that their heart rate should increase, but conversation should still be possible. Twice weekly activities should be aimed at increasing or maintaining exercise capacity³⁵. A study by Andersen (2006) of children aged 9-15 years found that inactive children had three times the risk of cardiovascular disease compared to those who were more physically active. The study has a clear conclusion that children need to be more physically active to prevent the risk of cardiovascular disease³⁷.

The WHO recommendations for physical activity in children aged 5-17years (2010)⁴

For children and young people, physical activity includes play, games, sports, transportation, chores, recreation, physical education, or planned exercise, in the context of family, school, and community activities. The recommendations to improve cardio-respiratory and muscular fitness, bone health, and cardiovascular and metabolic health biomarkers are:

1. Children and youth aged 5-17years should accumulate at least 60 minutes of moderate - to vigorous-intensity physical activity daily.
2. Amounts of physical activity greater than 60 minutes provide additional health benefits.
3. Most of the daily physical activity should be aerobic. Vigorous-intensity activities should be incorporated, including those that strengthen muscle and bone, at least 3 times per week.

Children under 5 years old

The Chief Medical Officer for the UK¹⁷ advises as follows:

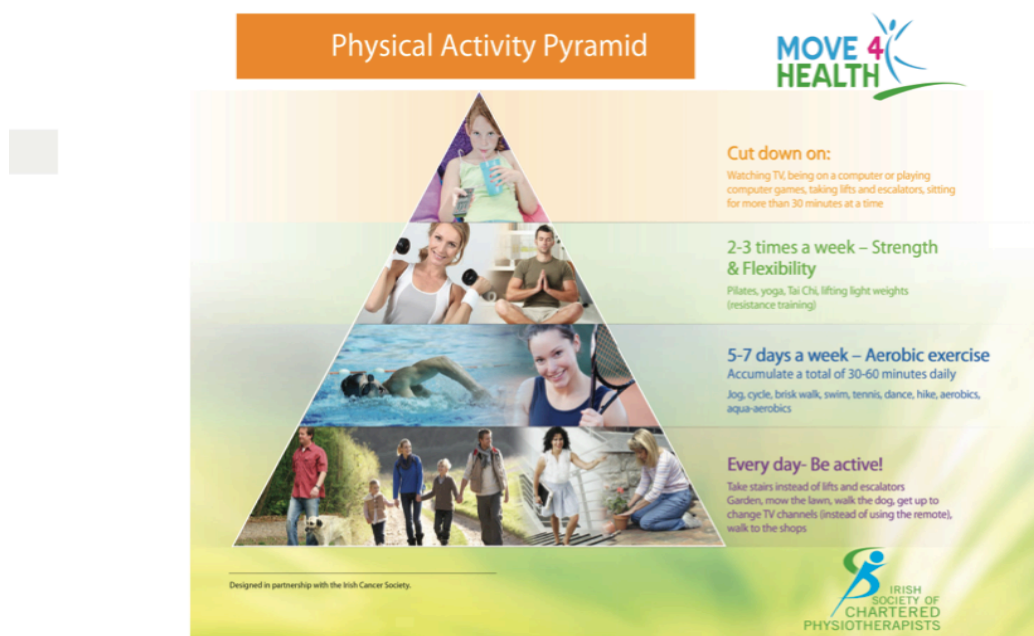
1. Children of pre-school age who are capable of walking unaided should be physically active daily for at least 180 minutes (3 hours), spread throughout the day.*
 2. All children under 5 years should minimise the amount of time spent being sedentary (being restrained or sitting) for extended periods (except time spent sleeping).
- * Most UK pre-school children currently spend 120–150 minutes a day in physical activity, so achieving this guideline would mean adding another 30–60 minutes per day.

3. Physiotherapy and Physical Activity

This chapter outlines the role of physiotherapists as the health professional with specific knowledge, skills and competencies in relation to exercise provision, pathology and prescription. The chapter also includes the World Confederation for Physical Therapy (WCPT) policy on physiotherapists as the exercise experts across the lifespan. It also explains why Member Organisations should be the first contact for governments and regional/local authorities when addressing commitments to improving the physical health of its population.

The theoretical basis of physiotherapy is rooted in scientific and social scientific knowledge and a recognition that different factors contribute to the maintenance of health, pain and disability, injury and disease. Life experiences, as well as social and cultural factors, lead to ailments, disabilities, physical and mental strain.

This understanding, together with practical/clinical knowledge, forms the basis for determining how disease and conditions of the musculoskeletal system occur, can be treated and prevented. Through a comprehensive analysis of movement, an impression of rhythm, flow, suppleness, balance and coordination is achieved. The Physiotherapist is able to undertake specific tests and evaluations to assess limitations of movement.



Physical Activity Pyramid promoted by physiotherapists (Ireland Member Organisation and Irish Cancer Society 2012)

The World Confederation for Physical Therapy (WCPT) in its policy on physiotherapists as the exercise experts across the lifespan³⁹ states that with increasing numbers of people, including patients and clients with diverse varieties of conditions, leading sedentary lifestyles, it is imperative that effective strategies for exercise across the lifespan are implemented. As experts in movement and exercise, and with a thorough knowledge of functional anatomy and pathology and its effects on all systems,

Physiotherapists are the ideal health professionals to promote, guide, prescribe and manage exercise activities. Exercise promotes well-being and fitness. It is a powerful intervention for strength, power, endurance, flexibility, balance, relaxation, and the remediation of pathophysiology, impairments and functional limitations. (See Appendix 1 for full statement).

Pain and loss of function are the most common reasons for people to seek physiotherapy. Following a detailed assessment, the Physiotherapist advises on a range of strategies to increase activity levels. The Physiotherapist's assessment may find that there is a need for the person to exercise to develop; movement, specific muscle strength, coordination, balance, and increase cardiovascular and lung function, before it is possible to become more physically active and put into practice the recommended 30 minutes of daily activity of moderate intensity. Knowledge of the effect of comorbidities combined with knowledge of function and the management of damaged and painful tissue means that physiotherapists can instruct and guide the person in the treatment phase. The physiotherapist recommends the correct level of exercise and activity for the individual to achieve the optimal effect.

Physiotherapists have the relevant skills to provide individualised exercise programmes. These are based on the assessment, from which the physiotherapist selects the type of activity, degree of load and intensity appropriate to the individual's needs and abilities. This may involve specific exercise, related to joint and muscle status, strength and endurance, and the patient's age, current injury, disease or symptoms. Rehabilitation will be achieved through close follow-up, specific activities and a gradual progression. Physiotherapists also provide individualised activities in groups.

Physiotherapists use their knowledge of illness and movement analysis to detect any compensatory movement strategies that the patient with chronic pain uses to avoid movement and their pain. Patients with chronic pain often demonstrate movement phobia. This may be associated with an exaggerated or irrational fear of physical movement due to the pain sufferers' perception of themselves as being vulnerable to increased pain or aggravated injury. This can lead to long-term passivity, resulting in muscular atrophy, physical deconditioning and depression⁴⁰. Physiotherapists use a variety of modalities to reduce pain perception to ensure avoidance of dysfunctional movement strategies. Additionally, it is important to downplay the importance of pain in relation to movement and to provide information on optimal exercise doses depending on the patient's health problems. Pain perception can thus be reduced and patients are enabled to better cope with their situation. Research has shown that physical activity under guidance yields a stronger pain-relief effect for people with long-term pain conditions (irrespective of diagnosis) compared to those where a physical activity programme is lacking⁴¹.

Physiotherapists have a unique combination of knowledge of the physiological effects of activity, understanding of the meaning of activity and movement in a broader sense, and the necessary knowledge of pathology to address the needs of groups and individuals in creating opportunities for meaningful and healthy activity.

4: Health Promotion

This chapter defines Health Promotion and emphasises the importance of settings in influencing the uptake of healthier lifestyles. It also outlines the importance of physiotherapy in the settings approach. It provides examples of how Member Organisations assist governments and regional/local authorities in facilitating greater physical activity among the population.

Health Promotion is defined as the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being an individual or group must be able to identify and realise aspirations, satisfy needs and change/cope with the environment (Ottawa Charter 1986)⁴².

4. 1 Health Promotion and the Settings Approach

The Ottawa Charter⁴² stated, "Health is created and lived by people within the settings of their everyday life; where they learn, work, play, and love". This settings based approach to health promotion is viewed as one of the most important aspects of the Charter; it involves a holistic and multi-disciplinary approach, which integrates action across risk factors. The goal is to maximise disease prevention via a "whole system" approach. This resulted in the establishment of a number of settings; Healthy Cities, Healthy Towns, Healthy Workplaces (including Health Promoting Hospitals), Healthy Schools etc. Physiotherapists have a vital role in these settings (especially workplace and school) as the advisors and implementers of physical activity programmes and facilitators of individuals and populations to take up, maintain or increase physical activity. Further examples are provided in Section 2.

To stimulate increased daily activity, it is important that the environment where people live and work encourages activity. In France many local authorities provide exercise equipment in parks. In Spain, Israel and Italy exercise equipment is provided in open air spaces such as beaches and boardwalks. In the Nordic countries exercise equipment is provided in public parks and in Ireland there is a national initiative to create cycle paths along disused railway tracks.

ER-WCPT recommends that local authorities should provide bicycle lanes, pedestrian paths and green spaces which make it safer and easier to be physically active. In addition, local authorities should allocate priority areas for activity in the community, such as sports, marked trails, skate paths, ski trails, ball bins and skateboard ramps.

Transport plans should promote everyday activity. Research suggests that good outdoor areas encourage increased physical activity in children²⁶. All kindergartens and schools should have outdoor areas that stimulate play and various activities. It is likely that the increased focus on physical activity in school will lead to increased activity in the child's leisure time, not only in adolescence, but also in later life. The effect seems to be greatest in children from social groups with low income and education, including those with immigrant parents²¹.

5: Physiotherapy, Health Promotion and Physical Activity

This chapter brings together the three strands which governments and regional/local authorities should have in order to facilitate and maximise opportunities for their respective populations to be active and healthy.

Physiotherapists use the health promotion approach of participation and empowerment in their treatment to facilitate individuals and groups to improve their lifestyles and health through physical activity. Their approach involves the use of existing models related to health behaviour e.g. how to target their approach according to the Stages of Change Model⁴³ and to use the Health Belief Model⁴⁴ to assist individuals and groups in identifying the cues and barriers to adopting healthier lifestyles. These approaches, known as brief interventions, can be used with patients who are receiving physiotherapy for a condition which may or may not be related to physical activity. The approach of the intervention is to facilitate individuals to bring about behavioural change e.g. uptake of healthier lifestyles especially in regard to increasing physical activity levels.

Reducing inactivity and passivity is a major health challenge. Physiotherapists have an important role in addressing this challenge by using physical activity as one of several measures in health promotion, prevention and rehabilitation.

Chronic conditions and physical activity

Some people with long term pain, longstanding weak motor skills, psychological problems, chronic illnesses and disorders will report to the Physiotherapist of their negative experiences of trying to be physically active. The Physiotherapist's knowledge skills and competencies combined with their knowledge of health promotion approaches enables them to use such opportunities to explain how physical activity can be used to improve an individual's condition. It may create an opportunity for the patient to experience mastery by means of the body. This way the patient's resources and opportunity for change will be highlighted and serve as a starting point for increased activity.

People with disabilities

Physiotherapists have both an opportunity and an obligation to address lifestyle conditions such as inactivity among people with disabilities. People with disabilities often have lifelong contact with physiotherapists and usually trust the physiotherapist's knowledge of physical activity. Physiotherapists have to redirect their attention from the treatment of the primary condition to the prevention of potential lifestyle conditions. Through their knowledge and methodological skills, physiotherapists encourage and facilitate physical activity that would be specific to the needs of individuals who are already physically, mentally or in other ways challenged. In keeping with health promotion approaches, they pay special attention to possible barriers that hinder and

cues that facilitate a person with disability to participate in a physical activity programme that would develop, or maintain, a healthy lifestyle. Close collaborative interdisciplinary working, especially with health professional colleagues in Dietetics and Nutrition, is vital to the success and sustainability of such programmes.

Smoking Cessation and Physical Activity

The ER-WCPT has developed a guideline “Staying Clean”, to improve the quality level of physical and mental health in ex-smokers and people who want to stop smoking. Physiotherapists throughout Europe can assist people who wish to stop smoking through implementation of the guideline by creating specific exercise programmes focused on smoking cessation. These programmes can be applied in multiple settings⁴⁵.

6. Physical Activity for well-being, disease prevention and treatment – The evidence

This chapter demonstrates the evidence for physical activity in particular for disease prevention and treatment. It shows this evidence for a variety of client groups such as pregnant women and older adults and for several conditions such as obesity and cardiovascular. It includes the emerging evidence for the importance of physical activity after cancer treatment and how it contributes to the reduction of recurrence.

6.1 Client Groups

Older Adults

It has been shown that exercise for older people can reduce fall trends⁴⁶ and has a beneficial effect on health related quality of life. Falls are a predominant reason for elderly people admissions to hospitals⁴⁶

Lower levels of physical activity in older adults are likely to lead to a decline in cardiovascular fitness and muscular strength². This decline may result in older adults falling below a threshold for independence. One systematic review included 66 articles all of which examined the relationship between physical activity and functional independence⁶. Participants were limited to healthy community dwelling older adults (65-85 years) and the outcomes used were related to functional limitations, disability or loss of independence. It was found that physically active older adults had an approximately 50% lower risk of disability in activities of daily living (ADLs) and instrumental activities of daily living. Physically active older adults also tended to have a slower rate of functional decline. There was a consistency across the studies and the benefits were observed both in the short term and long term follow up. There was some evidence of a dose response relationship⁶. Two systematic^{48,49} reviews also revealed that enhanced musculoskeletal fitness is positively associated with functional independence, mobility and overall quality of life.

Older adults who already have functional limitations also can benefit from regular physical activity⁵⁰. There is strong evidence to suggest that older adults at risk of falls who partake in regular physical activity can significantly reduce their risk. Reduction in the risk of fall is seen in older adults who partake in programmes that include balance and moderate intensity muscle strengthening activities for at least 90 minutes per week plus moderate intensity walking for about an hour a week². This evidence provides direct support for the recommendation that resistance training and flexibility exercises are performed at least twice a week to maintain functional status, promote lifelong physical activity and enhance overall quality of life⁷.

Concerns that preventive measures in older adults might increase frailty by increasing survival without improving health were allayed by the results from the Canadian Study of Health and Ageing. It investigated the impact of exercise on the probabilities of health improvement, deterioration and death in community-dwelling older people. It found that exercise attenuated the impact of age on mortality across all grades of frailty. The

greatest benefits of the exercises were improvements in health status in those who were frailer at baseline. The study concluded that the net effect of exercise should therefore be to improve health status at the population level⁵¹.

Physiotherapists work in Community Rehabilitation Teams which provide Falls Prevention classes in the community. In addition physiotherapists provide advice on Falls Prevention and promotion of balance and exercise for older adults in their own homes.

People with decreased work capacity or decreased functional level

Governments, local authorities and health insurance companies in Norway and the UK have introduced schemes to support people who are dependent on long term social benefits to enable them to return to work. In the UK, the Member Organisation has produced a booklet entitled “Are you fit for Work?” Physiotherapists are involved in the provision of programmes of exercise, motivation and skills development to increase the capacity and prepare a person for return to work.

The ER-WCPT is a member of the **Fit for Work Europe** coalition which focuses on the importance of prevention, early intervention and management of musculoskeletal diseases (MSDs) and injury related MSDs in the workplace⁵². The ER-WCPT chairperson is a member of the Fit for Work steering committee.

People with Disability

Persons with disabilities (PWDs) experience health disparities and greater unmet needs in comparison to the general population. While persons with disabilities develop the same health problems that affect the general population, they are more susceptible to developing chronic conditions such as high blood pressure, cardiovascular disease and diabetes, experience an earlier onset of these diseases and an earlier death than others because of conditions not related to the primary disabling condition⁵³. In studies of self-assessed health, people with disabilities report poor health ten times more often than the rest of the population⁵³.

The main explanation for the disparity is, according to WHO⁵⁴, societal barriers that exclude people with disabilities from the benefit of the health care system – for example lack of political and professional awareness and priority of the special needs, lack of professional knowledge about health among people with disability, lack of information and services directed at persons with special needs regarding symptoms and the need for medical attention, possible access to treatment and special needs regarding health promotion, prevention and self-care.

Physical activity is one of the key determinants in keeping healthy; abled or disabled but studies show that people with a disability are more likely to be inactive and obese than the population in general⁵⁴. As a result, attention should be given to ensure that people

with disability have the same possibilities to engage in activities that support their efforts to be physically active and to keep healthy.

Pregnant women

Women who are obese before and during pregnancy, and remain overweight one year after pregnancy, increase risk of their child being overweight⁵⁵. Europe has seen a significant increase in the number of overweight children. Children may get a better start if the mother is encouraged to remain in good shape during pregnancy. During pregnancy women can choose to continue with a range of physical activities. However a number of women avoid activity and exercise because of pregnancy or pelvic-related ailments. Physiotherapists with specific expertise in the management of pelvic-related ailments have an important role in the assessment and management of these disorders, which can benefit the health of both mother and child.

Children and youth

Studies from many western countries have found that children and young people are becoming far more sedentary, spending many hours during the week in front of the TV, playing computer games and communicating via the internet⁵⁶. Studies focusing on avoiding inactivity rather than increasing physical activity show good results in weight control⁸. This suggests that reducing inactivity can be an important step in itself.

A Norwegian study found a clear tendency for children and young people to be less physically active, that the proportion of young people from minority backgrounds was less active than ethnic Norwegians and there was an increased likelihood that children would develop overweight problems if their parents had a low educational level^{57, 58}.

Children who have motor skill deficiencies, some behavioural disorders, asthma, obesity or mental health problems, require extra stimulation to become more active. Good coordination between local health services and schools can lead to the early identification of children who need to receive support. Physiotherapists, with their knowledge of motor development and the importance of coordinated movement, can make a real difference to children with motor skill deficits. Physiotherapists work with individual or groups of children with special needs. Following assessment of the child, the physiotherapist works in cooperation with parents and staff in kindergartens and schools, to facilitate the repetition of the agreed physical activity programme.

An investigation of the effects of an exercise programme on primary school children promoting physical activity has been undertaken by the ER-WCPT. This resulted in the development of guidelines on physical activities and exercise aimed at avoiding back pain and improving the quality and level of physical and mental health in children and teenagers. *Pain in the Back* guidelines can be applied in schools and places of education across Europe which will promote physical activity and healthy lifestyles amongst school age children³⁸.

6.2. Physical Activity in disease prevention and treatment

Acute injuries

People who undertake physical activities have a small risk of developing overuse injuries or sustaining an acute injury. The physiotherapist can assess the injury and advise the patient how to become physically active again and resume their daily activities. This can be done through early treatment and alternative activities under the guidance of the physiotherapist during the rehabilitation period. Research recently published has demonstrated that the risk of new injuries leading to periods of passivity can be prevented through targeted injury prevention measures⁴¹.

Prevention - Weight Maintenance

Increased levels of physical activity are associated with the prevention of weight gain over time⁸, however the nature of the dose response relationship is not clear^{6,8}. One systematic review⁶ reviewed 31 observational studies and 25 intervention studies which ranged in length from 1 month to 2 years (most being 4-6 months in duration). The amounts of exercise ranged from 2-3.5 hours per week and half of the studies were limited to overweight/obese individuals. The observational studies reviewed reported weak to moderate evidence of an inverse relationship between physical activity and overweight/obesity. The majority of the intervention studies that were aerobic in nature observed significant changes in measures of total fat and abdominal fat in response to training⁶. The World Health Organisation reported that certain randomised controlled trials lasting up to 12 months indicate that aerobic activity performed for at least 150 minutes/week is associated with approximately 1-3% weight loss which is generally considered as weight maintenance⁴.

Other evidence shows that there is a variation in how much physical activity people need in order to achieve weight stability; from doing the equivalent of 150 - 300 minutes a week of moderate intensity walking at about a 4 miles per hour pace². A further study in 2007⁸⁷ found that to prevent obesity/weight gain, all healthy adults aged 18 to 65 years need moderate-intensity aerobic (endurance) physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic physical activity for a minimum of 20 min on three days each week. People who want to lose a substantial amount of weight or people who have lost substantial amounts of weight and want to maintain would need to do more than 300 minutes of moderate intensity activity a week to meet these goals. There is good evidence of an inverse dose-response relationship between physical activity and overweight/obesity⁶, however further studies need to be carried out to assess the nature of the dose response relationship.

Treatment - Obesity

A person with a Body Mass Index (BMI) between 25 and 30 is considered to be overweight, and one with a BMI over 30 is considered to be obese. The proportion of

people with a BMI in the obese range has risen significantly in Western Countries and in Europe. Table 2 shows the prevalence of obesity (BMI>30) in EU countries, based on self-reported height and weight in national surveys (WHO 2006). By comparison, the corresponding figure for the U.S. was 31% (figures for health care). A Swedish study has shown that the number of overweight 7 year olds has increased from 8 to 20% since 1989. 70-80% of these children will remain overweight as adults⁵⁵.

As exercise is undertaken, a change takes place in body composition; muscle mass increases and fat tissue is reduced. BMI and body weight may therefore remain unchanged when one starts exercising. In order to achieve lasting weight reduction, moderate physical activity may not be sufficient. Fredriksen and Pettersen argue that the overweight need to increase their exercise intensity level in order to lose weight and maintain the reduced weight⁶⁰. A higher level of intensity (60-80% of maximum oxygen admission) increases the metabolic effect due to a greater burning of fat and carbohydrates during the activity, as well as increased wellbeing for a long time after the exercise is completed⁶¹. Both aerobic and resistance exercise without caloric restriction have been shown to be effective for reducing abdominal fat and intrahepatic lipid in moderately obese adolescent boys⁸⁸. Circuit-based exercise can be an effective method for promoting reduction in anthropometric parameters in obese older women⁸⁹.

Exercise has been shown to have a major benefit in weight regulation, most commonly after the initial weight loss period. Epidemiological studies have consistently found that people who reported being more physically active doubled their chances of successful weight loss maintenance⁹⁰

While exercise has a positive effect on body weight and cardiovascular disease risk factors in people who are overweight or obese, particularly when combined with diet, a 2006 study⁹¹ showed that even if no weight is lost, exercise improves health.

In the UK, Physiotherapists and Dieticians in their "Fit for the Future" campaign (2009) have reinforced the need for every child to be physically active for 60 minutes every day to help combat childhood obesity⁶².

In conclusion physical activity is recommended as a component of weight management for prevention of weight gain, for weight loss, and for prevention of weight regain after weight loss. Evidence supports moderate-intensity physical activity between 150 and 250 minutes per week to be effective to prevent weight gain, and more than 250 minutes of physical activity per week has been associated with clinically significant weight loss. While studies have indicated that people after weight loss, to prevent regaining weight and ensuring weight maintenance, need more than 250 minutes of physical activity per week⁹². These findings are generally in line with the NICE Guidelines (2006) on Obesity.

Table 2: Prevalence of obesity (BMI > 30) among adults (mostly 18-65 years of age) in EU countries. Most percentages are based on self-reported height and weight in national surveys (WHO 2006).

Country	Women (%)	Men (%)
Austria	9	9
Belgium	13	12
Bulgaria	14	11
Cyprus	12	13
Czech Republic	16	14
Denmark	9	10
Estonia	15	14
Finland	14	15
France	13	12
Germany	12	14
Greece	18	26
Hungary	18	17
Ireland	16	20
Italy	9	9
Latvia	20	12
Lithuania	17	14
Malta	20	27
Netherlands	11	10
Poland	20	16
Romania	10	8
Slovenia	14	17
Slovakia	15	14
Spain	14	12
Sweden	11	12
UK	26	22

Prevention – Bone health

Preserving bone, joint and muscle health are essential with increasing age. Studies show that the frequent decline in bone density, which happens during ageing, can be slowed with regular physical activity. Numerous studies and systematic reviews have demonstrated that aerobic and resistance activities enhance bone mineral density across a lifespan, however limited research has been carried out looking at the relationship between physical activity and osteoporosis⁶. In one Meta-analysis of Randomised Control Tests (RCTs), exercise-training programmes were found to prevent or reverse 1% of bone loss per year in the lumbar spine and femoral neck in both pre and postmenopausal women⁶³. In another systematic review, only 2 studies

were deemed eligible for review despite the fact that over three thousand studies examining the relationship between physical activity and bone density/osteoporosis were available⁶. From reviewing the two studies the authors concluded that an inverse relationship between physical activity and osteoporosis exists. The '2008 Physical Activity Guidelines for Americans² state that benefits of physical activity on bone health can be seen to begin at 90 minutes a week and continue up to 300 minutes a week.

Cardiovascular Health

Cardiovascular disease contributes substantially to morbidity and mortality worldwide^{2,8}. The WHO reports a direct relationship between physical activity and cardiovascular health⁶⁴. This relationship is so well recognised that physical inactivity has been identified as an endemic coronary heart disease (CHD) modifiable risk factor^{7,8}. As a result, the benefits of physical activity on cardiovascular health are some of the most extensively researched and documented among all the health benefits. There is a large body of prospective observational evidence available on the effect of physical activity on cardiovascular disease². One systematic review reported on the results of 51 articles which examined the relationship between physical activity and cardiovascular health. A total of 658,747 participants were followed over an average of 14.6 years. 30,292 incidents of cardiovascular disease were reported⁶. The most physically active individuals showed a 33% lower risk of developing cardiovascular disease than the least active showing a consistent inverse relationship between physical activity and cardiovascular disease^{6,8,59}. Early studies focused on men, however in recent times the relationship appears to be similar for women^{6, 64}.

Metabolic Health

Prevention:

The WHO in its 2010 '*Global Recommendation on Physical Activity for Health*', states that there is a direct relationship between physical activity and metabolic health. This relationship is said to include a reduction in risk of type 2 diabetes and metabolic syndrome⁴.

Metabolic syndrome is a collective term describing an accumulation of risk factors, which affect cardiovascular disease. The WHO defines the syndrome as: decreased glucose tolerance, diabetes or increased insulin resistance, plus two or more of the following conditions: hypertension, dyslipidaemia (adverse lipid profile), being overweight with central adipositas (abdominal obesity)⁶³. For patients at risk of developing metabolic syndrome, regular physical activity will provide increased insulin sensitivity in the muscle tissue, improve blood fat profile and lower blood pressure.

Diabetes caused by reduced insulin production (type 1 diabetes), constitutes a minority of those who have diabetes; 80-90% of people with diabetes have type 2⁶⁴. The latter, caused by excess weight and sedentary lifestyle, results in cells becoming more

sensitive to insulin (insulin resistant) and reduced levels of glucose in the muscles. This leads to an increased glucose concentration in the blood.

There is strong epidemiological evidence supporting the protective effect of physical activity against type 2 diabetes. Large prospective studies performed in men and in women have shown that type 2 diabetes develops less frequently in individuals who exercise regularly⁶. 20 articles were included in a systematic review by Kesaniemi et al 2010⁶. 624,952 participants were followed for an average of 9.3 years. 19,325 cases of diabetes were seen. The most active had a 42% lower risk of developing type 2 diabetes than the least active. Randomised Controlled Trials which looked at participants who were at high risk of developing type 2 diabetes found that they had a 58% lower risk of developing it if they carried out 150 minutes of moderate to vigorous intensity activity per week⁶. Authors concluded there was a consistent inverse relationship between levels of physical activity and type 2 diabetes. A dose response relationship has been reported for physical activity and the prevention of type 2 diabetes⁶ and data indicates that 150 minutes a week of moderate to vigorous physical activity is needed to decrease the risk significantly⁵⁹.

Treatment

Experience has shown that exercise can partially reverse this trend by increasing the glucose level in the muscle tissue. It is therefore important that health promoting exercise includes the large muscle groups^{61,67}. With increasing muscle bulk there is increased insulin sensitivity, so that insulin is more effective and, with the increase of glucose in the muscles the glucose concentration in the blood declines^{31,33}. The risk of developing heart disease increases by 3 to 4 times for patients with type 2 diabetes.

Daily moderate exercise has been shown to bring about a 13% reduction in the incidence of type 2 diabetes, while higher intensity exercise with the same total energy consumption reduces the incidence by 21%²².

In addition to the research base, clinical experience demonstrates that a combination of endurance exercises with strength training alternately is recommended together at least twice a week. Endurance exercise targets the cardiovascular system, and strength training is capable of increasing muscle mass. Such a combination guarantees a considerable variation in types of exercise and is therefore more diverse^{68,69}.

Mental Health

Prevention

Physically active adults have a lower risk of depression. In observational studies, it has been shown that individuals with higher levels of physical activity are less likely than those with lower levels to develop depressive illness². In the Harvard alumni study,

persons who engaged in more hours of sports per week measured in the 1960's had a reduced risk of depression during a 23 to 27 year follow up period⁷⁰.

Mental health benefits have been found in people who do a combination of aerobic and muscle strengthening activities 3-5 days per week for 30-60 minutes at a time². Further studies need to be carried out to examine the dose response relationship.

Treatment

There is evidence that physical activity has a beneficial effect on mild to moderate forms of depression^{69,70}. Many people with mental health disorders need a variety of treatments. Adapted physical activity may be an important part of the treatment regime.

Cancer

Low levels of physical activity are associated with a high risk of colon and breast cancer, according to WHO findings. Looking at six types of Cancer in 15 European countries, it was estimated that 165,000-330,000 cases of cancer could have been prevented in 2008 if the population had maintained sufficient levels of physical activity⁴.

Breast Cancer

Prevention

A systematic review of epidemiological studies revealed that moderate intensity physical activity was associated with greater protective effects than activities of a lesser intensity. The Canadian Medical Association reports that women who are physically active exhibit a 20%-30% reduction in relative risk of breast cancer compared to their inactive counterparts^{7, 73}. Research provides evidence that a wide range of moderate intensity activity between 210 and 420 minutes per week is needed to significantly reduce the risk of breast cancer. 150 minutes a week does not appear to provide a major benefit.

There is compelling evidence that physical activity is significantly associated with reduced breast cancer risk⁹⁴. Particularly, if this physical activity is sustained over a person's lifetime and is at least moderate in intensity and regular in frequency and duration⁹⁵.

Treatment

Exercise and keeping active throughout the cancer journey can help mitigate some of these common side effects of breast cancer adjuvant therapy, such as fatigue, depression, decreased physical capacity, and weight gain⁹⁶. It has also been shown to have beneficial effects on overall health-related quality of life (HRQoL) for those undergoing active treatment⁹⁷ and for breast cancer survivors⁹⁸.

A Cochrane review, which examined exercise interventions exclusively during treatment for breast cancer, found improvements in physical fitness and activities of daily life but no significant improvements in quality of life or fatigue levels⁷⁶. A Randomised

Controlled Trial of a supervised group exercise programme for women being treated for early stage breast cancer showed that it provided functional and psychological benefit at the end of the 12 week programme and at a six month follow up. The study recommended that policy makers would consider including opportunities for exercise in cancer rehabilitation services⁷⁷.

Post Treatment

A prospective observational study in survivors of breast cancer has indicated a 50% risk reduction in mortality among women who are regularly active compared with those who remained inactive post-diagnosis⁷⁴. A recent systematic review of the effects of exercise on breast cancer patients and survivors concluded that exercise is an effective intervention to improve quality of life, cardio respiratory fitness, physical functioning and fatigue⁷⁵.

A study on the effects of an exercise programme on cancer-related fatigue after treatment in patients with mild to severe fatigue showed a significant increase of physical performance and a reduction of global fatigue⁷⁸.

There is now consistent evidence to support the premise that exercise and physical activity may extend survival for breast cancer survivors⁹⁹ leading to reductions in both breast cancer-specific mortality and overall mortality^{100,101}.

Physiotherapists use their knowledge of physiology including exercise physiology and of empowering behavioural approaches to assess, design and implement such exercise programmes for women during and after cancer treatment.

Colon Cancer

Prevention

Physically active people have a significantly lower risk of colon cancer than do inactive people⁷. An inverse relationship has been shown in many studies with one systematic review stating that 71% of the 49 studies they reviewed showed an inverse relationship between physical activity and colon cancer⁸. Another systematic review identified 34 articles which examined the relationship between physical activity and colon cancer⁶. The studies involved 1,322,900 participants and 14,625 cases of colon cancer. The length of follow up averaged at 1.7 years. The authors concluded that the active groups had a 30% lower risk of developing colon cancer. This conclusion is similar to the Canadian Medical Journal Association⁷ conclusion which found that physically active men and women exhibit a 30-40% reduction in the relative risk of colon cancer compared to their inactive counterparts⁷³.

There is now convincing evidence of the beneficial effect of physical activity on colon cancer risk¹⁰². Studies have shown a clear inverse association between physical activity levels and colon cancer in both men and women¹⁰³, with the accumulated

evidence suggesting that physical activity is associated with a 25% reduction in colon cancer risk¹⁰⁴.

Post treatment

In terms of the benefits of physical activity for those living with and beyond bowel cancer, the evidence remains limited, with more randomised control trials needed to help guide clinicians in this area. For colorectal cancer, the available evidence does indicate that physical activity is beneficial for survivors^{105, 106} with survivors who meet the general exercise and physical activity guidelines shown to report significantly better quality of life and fatigue scores than those who do not meet the guidelines¹⁰⁶. Aerobic fitness levels have also been shown to be improved by exercise interventions in this cohort¹⁰⁷.

In relation to long term outcomes for patients with colorectal cancer, physical activity has been found to be associated with improved colorectal cancer-specific mortality and overall mortality^{108,109,110}. This association was reported to occur regardless of age, disease stage, BMI, tumour location or year of diagnosis¹⁰⁹.

Prostate Cancer

There is some evidence to suggest that higher levels of lifetime physical activity may have a protective effect in regard to prostate cancer¹¹¹. However, additional data is required in this area as overall the evidence is quite inconsistent^{112, 113}. Furthermore, the magnitude of risk reduction reported to date remains modest and it is unclear whether the benefit accrued from physical activity varies according to other factors such as age, family history, BMI etc.¹¹⁴

There is greater clarity surrounding the benefits of physical activity for those living with and beyond prostate cancer. Exercise and physical activity interventions have been shown to be beneficial in improving muscular endurance, aerobic capacity and overall quality of life as well as reducing levels of fatigue^{114,115}. Benefits have also been noted with regard to functional performance, muscle strength and muscle mass^{114,116}.

Evidence is also emerging regarding the benefit of physical activity on prostate cancer survival. One, recently published, study in this area showed that higher levels of physical activity in men with prostate cancer was associated with lower overall mortality and prostate cancer-specific mortality¹¹⁷. This study suggested that a modest amount of vigorous activity for 3 hours or more a week may substantially improve prostate cancer-specific survival¹¹⁷.

In conclusion there is incontrovertible evidence that regular physical activity contributes to the primary and secondary prevention of several Non Communicable Diseases. The evidence indicates that a minimum of 150 minutes per week of moderate intensity activity or 90 minutes of vigorous intensity activity per week is associated with

a reduction in the incidence of cardiovascular disease, metabolic disease, colon, breast cancer and depression. Further benefits of exercise include improved physical function and independent living in the elderly⁵⁹. The inverse dose response seen with cardiovascular disease and metabolic disease suggests that additional health benefits can be attained by increasing the level of physical activity further^{6, 50, 2, 4, 64, 79, 80}.

7. Conclusion

The Physiotherapist's knowledge of the body in health and disease and of function, movement, specific exercise and health behaviour as well as of health promotion approaches is important in the context of physical activity in disease prevention, management and health promotion. There are strong recommendations from the WHO, the EU and health professionals including the ER-WCPT relating to the amount of physical activity needed to achieve health. Physiotherapists have a clear role in facilitating the population to follow these recommendations and to use physical activity as a preventative measure as well as a therapeutic and rehabilitation measure.

Physiotherapists should have a clear and well-defined role in the local authorities for health promotion and disease prevention. This should include jobs in health, school health and public health services. These positions should include policymaking where they can influence planning. Programmes for patients who require lifestyle changes need to be established as permanent treatment options in local authorities. The quality of these must be ensured by the involvement of qualified and competent physiotherapists.

"If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health"

Hippocrates (460-370 BC)

SECTION 2

How the ER-WCPT and Member Organisations promote Physical Activity and the Role of the Physiotherapist in Physical Activity and Exercise

8. How the ER-WCPT and Member Organisations promote Physical Activity

Introduction

The Member Organisations individually and the European Region of the World Confederation for Physical Therapy promote physical activity and exercise as an essential requirement for achieving and maintaining fitness as part of a healthier lifestyle.

While Physiotherapists use the Health Promotion approach of empowerment and participation as part of their individual treatment, the Member Organisations individually and the European Region collectively work to influence the public policy aspect of Health Promotion. In Sweden for example, physiotherapists sit on Reference Groups for town planning to ensure urban designs promote physical activity. In other countries, the Member Organisation publicly advocate for cycle lanes, minimum exercise targets in schools, green spaces in housing developments and implementation of minimum physical activity standards.

ER-WCPT and individual Member Organisations advocate for public policy changes that facilitate an increase in the uptake of physical activity e.g. suitable transport planning to avoid safety concerns about commuting to work by bicycle. Evidence suggests that if promotion of active commuting is accompanied by suitable transport planning and safety measures active commuters are likely to benefit from a “safety in numbers” effect⁸¹. The Swedish Member Organisation was contacted for advice when its country was developing new lifestyle guidelines for exercise and the Danish government approached its Member Organisation for assistance in how to address the lifestyle health issues of people with disabilities.

ER-WCPT

- Works to promote physical activity in Europe
- Marks World Physical Therapy Day as a Physical Activity day in an EU context
- Promotes Physiotherapy as the profession with the expertise in physical activity
- Is a member of:
 - Fit for Work Europe coalition (FFWE)
 - European Health Forum (EHF)
 - European Public Health Alliance (EPHA)
 - European Platform for Action on Diet, Physical Activity and Health
- Is involved with European Innovation Partnership on Active and Health Ageing (EIPAHA) (to increase average healthy lifespan in the EU by 2 years by 2020)
- Supports the adoption and implementation of the Toronto Charter for Physical Activity⁸²
- Supports the 2012 EU Year of Active Ageing and subsequent physical activity related annual themes
- Aligns itself with EU programmes and events that promote physical activity.

- Endorses:
 - WHO 2010 Global Guidelines for Physical Activity⁴;
 - Recommended Policy Action in support of Health-Enhancing Physical Activity 2008 – Guidelines⁸³;
 - Together for Health: A strategic approach for the EU 2008-2013 (2007)⁸⁴;
 - A Strategy for Europe on Nutrition, Overweight and Obesity related health issues (2007) - an integrated approach for Europe to improve healthy nutrition and physical activity⁸⁵;
 - WHO European Charter on Counteracting Obesity (2006)⁸⁶ (Recommendation 2.3.5 is to build partnership between all stakeholders including professional networks).

Member Organisations:

- Promote physical activity at national and local level – governmental and local authority
- Get involved in WHO Healthy settings (e.g. Health Promoting Schools exist in 40 WHO European states)
- Promote Physiotherapy as the profession with expertise in physical activity.

How Member Organisations promote physical activity/exercise and the physiotherapist as the specialist

September 8th is annual World Physical Therapy Day and many countries mark it by highlighting nationally the importance of physical activity. The Member Organisations strive to promote physical activity at a national level in a variety of ways ranging from one off to continuous events. Examples include; providing seminars in schools to 5,000 children in 6 months (Turkey), Move4Health campaigns in Ireland and UK, Fit for Work and Fit for Future campaigns and booklets (UK), Physical Assessments of 1200 primary school children over a 4-year period (Romania), health promotion video for schools which was launched outside the parliament buildings (Malta) and a Physiotherapy truck that toured 12 states in 8 days to evaluate the levels of activity among the citizens (Switzerland).

The next part gives more detailed examples from several Member Organisations of their involvement in promoting physical activity in their country and also how they promote the role of the physiotherapist as the health professional with the expertise in exercise. The diverse range provides governments and regional and local authorities with many options. Working in conjunction with physiotherapists, authorities can choose options most appropriate to their country/region and adapt them to enhance physical activity and improve population health.

Austria

Runs different events to promote physical activity, mainly on a regional level:

- Participation in Health Days: a physiotherapist holds a lecture and shows exercises
- Promotion of World Physical Therapy Day through regional events
- “Kids enormously in shape” - a physiotherapy prevention project in primary schools (regional)

Belgium

Motivation in smoking cessation:

This is an initiative of VIGEZ (Flemish Institute for Health Promotion and Disease Prevention), where Axxon has offered its collaboration. It is a project that is intended for all health workers in primary care. It is intended for health professionals with enthusiasm for motivational interviewing and to encourage the patients in smoking cessation. More exercise is one of the resources that can help to achieve smoking cessation and this is the role of the physiotherapist to play. The project has explored the EU Projects “Staying Clean” and considered some elements as supporting material. With every email that is sent out of the secretariat, the link to the website is added to motivate the smoking cessation. See below: “*Motiveren tot Rookstop*”.

Belgium-Flanders-Limburg

“Axxon, Quality in Physiotherapy” the Flemish wing of “Axxon, Physical Therapy in Belgium”, participates in a multidisciplinary working group in the development of a prevention programme; “Prevention and detection of diabetes mellitus type 2” for all the stakeholders in primary care.

Currently, 500,000 Belgians have Diabetes Mellitus type 2, but 170,000 of them don’t know! GPs, dentists, pharmacists and physiotherapists are aware of this problem and want to establish systematic and science-based screening programmes by this project for each professional group.

The first and most important goal of the project is the early detection of a future pathology. It is scientifically proven and internationally accepted that a timely recognition of the first symptoms means that the problem can be solved with simple and inexpensive methods.

Diabetes mellitus type 2 can no longer be considered on epidemiological and pathophysiological point as a disease characterised by elevated blood glucose levels and this has its implications in treatment and control.

Each profession within primary care can tackle the problem from his/her perspective by providing substantial information concerning current and any future problem, by good dental hygiene, through early recognition of non-diabetic signs such as hyper- or hypoglycaemia, through controlled use of medication, by paying attention to neuropathies, unexplained decreased of muscle strength and disappearance/reduction of tendon reflexes in the lower limbs and by offering exercise schemes.

Cyprus

The Cyprus Association of Physiotherapy organised activities to celebrate the World Physical Therapy Day. The main objectives of these were: (1) to raise the profile of Physiotherapy to the public and to promote the role that physiotherapists play and (2) to highlight the importance of activity in maintaining good health and prevent illness in relation to physiotherapy. There was a special focus on the prevention of musculoskeletal problems during driving and working. Information leaflets were printed which contained information on: The profession of physiotherapy – Ergonomics and Driving – Movement and Health.

A group of physiotherapists, in cooperation with the Police Forces, stopped drivers at the exit of Nicosia on the highway to the four other main cities, and handed them the leaflets and gave them advice. The same activity was also organised at the main shopping centre of Nicosia, The Mall of Cyprus. Here the physiotherapists were assisted by a group of physiotherapist students from the European University with the distribution of leaflets and information to the customers.

Lectures, including demonstrations of activity/exercises, are delivered to various organisations, such as the CY.T.A, Departments, Municipalities, athletic sports clubs etc upon request,

Czech Republic

UNIFY ČR issues brochures and leaflets describing and promoting healthy manners, exercises and fitness activities (e.g. Exercise and right living; Eye exercises; Physiotherapist as the expert – who is it? TMS injury) It also informs the public by means of mass media (e.g. TV or radio programmes).

Denmark

- Organises courses for our members so they can use their knowledge about physical activity when they work with the client or patient.
- Does blogs on our homepage. Here our members have the opportunity to discuss how we help our clients to follow the recommendations for physical activity and how we use physical activity as treatment.
- Develops material for our members and patients, which inform them about the benefits of physical activity and how they can be active in daily life.
- Tries to influence government, politicians and health department to make decisions that makes it easier for people to be physically active in daily life and make decisions where physiotherapists have a central role in helping our clients to be healthy. Examples are: Physical Activity – Manual for Prevention Treatment plus Exercise on Prescription – work made by The National Board of Health, Denmark
- Has a foundation where physiotherapists can seek funding for research projects. For the next two years the foundation has a special focus on research protocols that address health promotion.

Estonia

- Is involved in establishing national curricula for an assistant technology specialist in health care and rehabilitation.
- It is also in cooperation with National Education Ministry and National Qualification Chamber developing basis of curricula for physical and occupational therapists working in the rehabilitation system with people with special needs. Curricula is planned to start at Tartu University BSc level in autumn 2011.
- Traditionally celebrates national Physiotherapy Day by working together with physiotherapy educational institutions (universities) to organise a scientific conference. The Social Ministry of Affairs in cooperation organizes already 3 years so-called “job-shadowing day” for college students for promoting physical therapy as discipline.

Finland

- Promoting health-enhancing physical activity is an essential part of basic education
- Increasing physical activity is one of the main objectives in the prevention and treatment of lifestyle-related diseases.
- Providing up-to-date information related to physical activity in the physiotherapy-journal and association’s web-pages.
- Lobbying for physiotherapy and physiotherapy profession with government and ministries: have meetings with ministers and key officials, send copies of the Physiotherapy journal.
- A campaign called “Älyjumppa” (“Smart Gym”) for school-children, which contains simple exercises to do during schooldays.
- Participating in several multidisciplinary working groups which aim to promote physical activity:

International: The Bone and Joint Decade 2000-2010 for Prevention and Treatment of Musculoskeletal Disorders. National: network Tules-liiga: health promotion, prevention and treatment with exercise. Different events e.g. lectures to physiotherapy students. National information Database: www.tule-tietopankki.fi in Finnish.

Involved in the national Move for health – advisory committee which was established after the WHO’s World Health Day in 2002 which had a “Move for health” theme. Every year one organisation takes lead of arranging the day. The emphasis lies in getting Finnish people to improve their health and well-being with the help of exercise.

Work with the Finnish Society of Sport Sciences, which is a multidisciplinary association that works in the field of physical culture and sports. The objective of the Society is to promote physical activity, health and well-being and it aims to transmit expert information pertaining to sport and health sciences to professionals and decision-makers as well as to citizens in order to assist them in making choices that promote their physical activity, health and well-being. The Society co-operates with scientific

communities, the Ministry of Education and Culture, sport and health associations and other organisations that operate in the fields of physical culture and health.

<http://www.sportscience.fi/>

Germany

Programmes of ZVK in Prevention and Health Promotion:

- Preventive Back School (Präventive Rückenschule)
- Prevention through Walking, Jogging and Nordic Walking
- Moving and activity programme for people with obesity (Bewegungs- und Aktivierungsprogramm für übergewichtige Erwachsene)
- Moving and activity programme for children and adolescents with obesity (Bewegungs- und Aktivierungsprogramm für übergewichtige Kinder und Jugendliche)
- Pelvic Floor School for women and men (Beckenbodenschule für Frauen und Männer)
- Health promotion with osteoporosis patients (Gesundheit fördern bei Osteoporose)
- Cardio-Fit (Aerobic/step-aerobic)– functional cardiofit with music and rhythm
- Physiotherapy after birth

Programmes for children:

- Promotion of Moving and Attitude for children incl. licence to guide children's back school programme in the setting kindergarten and school (Haltungs- und Bewegungsförderung für Kinder incl. Kinderrückenschullehrer-Lizenz, im Setting Kindergarten, Schule)
- Moving children – A Physio Programme for children (Bewegte Kinder – ein Physio-Kinderprogramm)
- The first years in the life of your child (Die ersten Lebensjahre im Leben eines Kindes – vom Baby bis zum Schulkind)

ZVK is a member in the German Federal organisation of health promotion (Bundesvereinigung fuer Gesundheitsförderung) as the representative about physiotherapy. The organisation advises the government in health promotion programmes.

Iceland

Walking bus

The walking bus is a concept designed to encourage children to walk to school, helping them to keep fit and benefiting the environment by reducing the use of cars for school run. The walking bus is a simple idea which any parent; teacher or interested party can set up. The basic idea is that a group of children walk to school together with accompanying adults to ensure their safety. This is an opportunity for fresh air, exercise and a chat with friends and reduces the number of vehicles at the school gates which

pose a safety and environmental problem. It has been proven that children who are encouraged to walk to school are more likely to make it a habit in the future.

The project has been set up in 2 schools as a trial led by the Icelandic Physical Therapy Association. The idea is to present it to elementary schools around the country. An instructional webpage has been set up for participants to get information on how to set up the programme on www.physio.is or email physio@physio.is.

Two kinds of walking bus have been tried out. The first is simply parents walking their children to school in a group. This is the easier set up as all you need to do is arrange for a small group to meet at a certain place and time and walk to school. The alternative walking bus is a volunteer-led bus with volunteers from within the community to accompany the children e.g. senior citizens

Balanced is a short educational film about balance and balance training, published by The Icelandic Physical Therapy Association. The film covers the control of posture and changes in maintaining balance that can occur in connection with increasing age, diseases or accidents. The film is being marketed for health care professionals working with this patient population, people with balance problems, as well as group exercise instructors working with the elderly.

Video clips from the film with education regarding balance problems are being produced for the national television in Iceland and will be published for the Icelandic population, e.g. what factors contribute to balance, how to regain balance and how to prevent falls. For further information go to: www.physio.is or email physio@physio.is.

“Use benches”. The Icelandic Physical Therapy Association in collaboration with senior citizen’s organizations around the country is organising marked paths with benches every 200-300 meters. This is designed to encourage older people to go out and walk more and at the same time staying healthier, more independent and be able to live at home for a longer period of time. It has been proven that one of the biggest barriers for the elderly to go out and walk is the distance between resting areas (e.g. benches). For further information go to: www.physio.is or send us an email at physio@physio.is.

Hreyfingur - Movement The Physiotherapy Department at the University of Iceland in collaboration with the Icelandic physical therapy association is organizing lectures in high schools. As part of their education physiotherapy students go to high schools and educate students about physical activity and good posture among other things.

Ireland

Annual Move4Health Campaign: a health promotion campaign aimed at the general public and promoting the role of Physiotherapy in the area of physical activity/exercise.

This campaign includes national print advertisements, leaflets, posters and public information meetings. It is usually launched by a national sports person.

Supports athletes participation in all major national marathons and other physical activity related events through a range of information, advice and guided dynamic cool down sessions led by a Chartered Physiotherapist.

Publishes a range of information leaflets in this area, including the following:

Physiotherapy Sports Injury and Recovery Most sports injuries can be effectively treated or prevented by your Chartered Physiotherapist, enabling you to return to your sport as soon as possible. Many Chartered Physiotherapists have additional postgraduate qualifications in the sports medicine field.

Physiotherapy and Fitness - Fitness means having enough energy all the time to do what you want to do. Your Chartered Physiotherapist can help you to choose the right activity to suit your needs, prescribe exercises to strengthen your weak areas and plan your exercise routine.

Marathon Information Leaflet - provides information to assist an individual in preparing for race day and to advice on post race recovery and injury prevention.

Post Race Recovery Strategies Leaflet - provides this advice on post race recovery and injury prevention.

Move4Health Campaign 2013: Exercise for Children with tagline “Time to Get Active Together” It was covered by 4 national newspapers, 2 capital city papers, health service national magazine, 2 national radio and 2 local radio stations Promotion was through Magazine, E-zine, Twitter and Facebook. Promotional Materials included radio and print media adverts, promotional pop-up stands, press releases, Photo-call pictures and presentations. A new website was designed containing a range of downloadable materials: Email signature, poster, leaflet / brochure, Physical activity diaries, printable questionnaire with link to *SurveyMonkey* powerpoint presentations, picture gallery, press pack, contact details and social media links (with further age specific information tabs).

World Physiotherapy Movement for Health Day September uses the WCPT Materials to reflect Irish Situation. www.move4health.ie website was redesigned to reflect campaign messages and information for the public and members. Campaign was launched by a photo shoot with national sportsman. A Press Release circulated to national and regional media was featured in the national newspaper Health Supplement. Free exercises classes were provided by members nationally to the public; these were promoted via Facebook campaign and sharing on ISCP social media platforms.

Italy

Uses World Physiotherapy day to mark the start of the national campaign of information “La schiena va a scuola” (Your back goes to school) with a brochure that is circulated to all schools at local level.

Latvia

Runs different events to promote physical activity, mainly on a regional level;

- Participation in Health Days: a physiotherapist holds a lecture and shows exercises
- Promotion of World Physical Therapy Day (2009 - 2013) through regional events - the main objectives of these were: to raise the profile of Physiotherapy to the public and to promote the role that physiotherapists play and to highlight the importance of activity in maintaining good health and prevent illness in relation to physiotherapy: a prevention project in primary schools (regional), a physiotherapist holds a lecture and shows exercises, free consulting for interested persons.
- Organises courses in physical activity in different areas, as Geriatrics, Heart and Lung diseases, Cancer etc. for members so they can use their knowledge about physical activity when they work with the client or patient.
- Is involved in establishing national curricula for an assistant technology specialist in health care and rehabilitation

Liechtenstein

Plans are in place for cooperation on projects in the near future with the government, e.g. <http://www.bewussterleben.li/>

Malta

- World Physiotherapy Day 2008: a month-long awareness campaign titled *Movement for Health*, main focus was to raise awareness about obesity, exercise and on the role of the physiotherapist in various health sectors. A film about the physiotherapy profession was produced as the main promotion tool in this campaign (presently available on the ER-WCPT website). The film was presented on stands in various outpatients department of the local hospitals and advice leaflets, bookmarks and balloons were distributed to the general public.
- Participated in a primary school open week and in a secondary school career convention to promote the physiotherapy profession. The info leaflets used during the Movement for Health Campaign were distributed to the students and they were encouraged to share the information about exercise and obesity with their parents and friends.
- World Physiotherapy Day 2009: A month long campaign in collaboration with Health Promotion Unit titled “Il-Mixi, tajjeb ghalik, tajjeb ghal sahhtek” (Walking is good for you and good for your health). During this period 2 fun walks and an info talk in the Local Council were organised. The first fun walk was inaugurated by MAP

president, Dr Charmaine Gauci - Director of the Health Promotion and Hon Jon Dalli – Minister for Social Policy (presently European Commissioner for Health and Consumer Policy). The ER-WCPT EU Matters Working Group members were also present for the launch. The promotional tools used were info leaflets and T-shirts. The press covered this event quite extensively both on national TV and newspapers.

- World Physiotherapy Day 2010: MAP was the national co-ordinator of a number of activities in different physiotherapy sectors across the Maltese Islands and the theme of the activities was 'Physiotherapy for Correct Posture'. This campaign targeted the healthcare service users and the general public with the aim of instigating healthy behaviour changes through information sessions, exercise classes, posters, leaflets and/or newspaper articles.
- World Physiotherapy Day 2012; a one week long campaign to promote world physiotherapy day with primary school children. The event included an educational session with information on how much physical activity children should do during the day, and the importance of physical activity to be healthy.
- World Physiotherapy Day 2013: MAP was coordinator for a local event between different national agencies to promote physical activity. The campaign was titled 'Fit for Future' and targeted primary school children and their relatives, the aim was to promote physical activity for well being, there were exercise classes and education sessions for children's relatives. The event was covered by the press.
- MAP was national collaborator of a national campaign titled "Now we Move" this was a weeklong national campaign to promote physical activity. It was funded by the national council for sports and MAP was one of the collaborators. The activities varied from exercise class to one to one educational sessions. The target population were adults.
MAP also participated during a national 'Citizen's Fair', the discussion was about Cross-Border Healthcare and equity of access to healthcare. Following the discussion MAP carried out exercises classes for the public.

The Netherlands

- Promotional website: www.defysiotherapeut.com
- Campaign promoting specialized physiotherapists (billboards at bus stations, posters at clinics and free gift cards in pubs)
- Campaign during the World Football Cup (posters at clinics, billboards near highways)
- Lobby (governmental)
- PR: free publicity (editorials in magazines)
- Tweeting: sending the latest news about physiotherapy to those who are connected

- Lobbies with health insurances, government, and other professions such as GPs and specialists union associations.
- Organises various conferences, events and workshops. (Explicitly designed for physiotherapists and not for consumers/ patients.)
- Participates in several government-supported projects in the field of integrated care chains funding, prevention, mono-and multi-disciplinary partnerships, etc
- The Physical Therapy for People with an Intellectual Disability group is involved in a project called the VB Fitscan. The VB-Fitscan is specifically developed by the Erasmus University in the Netherlands to determine the fitness level of adult en seniors with a mild/moderate intellectual disability. More information regarding the scan can be read [here](#) (in Dutch).
- The Oedema Physical Therapy group is involved in a national cancer initiative called OncoNet; it focuses on promoting fitness in patients with cancer. For more information see [OncoNet](#)

Norway

The main goal is to influence authorities to be aware of the role and importance of the physiotherapist in Physical Activity and to educate Physiotherapists to take on this work

- Produced a short film “Healthy lifestyle centres – a Physiotherapy Approach”, how Physiotherapists can use their knowledge to guide patients in changing their lifestyle.
- Organises a lot of post graduate courses in physical Activity in different areas, as Geriatrics, Heart and Lung diseases, Cancer etc.
- Organises once a year a thematic teaching in Physical Activity. It is a big conference with many parallel sessions with updated research and workshops. The main theme is different every year. In 2011 the title of the conference is “Physical Activity and Occupational Health”.
- Participates in the government’s awareness campaign for the public about more physical activity and less sitting/sedentary behaviour

Romania

Has two major regional events to promote the physical therapy and the movement. Firstly a cycling tour named “Kineto Tour” (in Romania the translation of “physical therapy” is “kinetoterapie”) in May in Oradea, Bihor County, Romania in order to promote the profession. About 40 persons attended the Tour, physical therapist, students in physical therapy, and we had white T-shirts with the expression “Kinetoterapie 2010” and “FRAK member of WCPT”. We pedalled 25 kilometres in Oradea and in two of the most important resorts in Romania, Băile Felix and 1Mai, at a slow pace, stopped from time to time in order to explain people how important physical activity and physical therapy can be for them. Excerpts from the tour were broadcasted by a local TV, TVS Oradea and we also appeared in the local papers.

As a consequence of the second “Kineto Tour” in 2010, FRAK decided to get involved in another tour organized for the first time in Romania. It was called the “MS Tour”, and

it has been performed for the benefits of people with Multiple Sclerosis, in 2-4 October 2010. Two physiotherapist members of FRAK and four PT students pedalled about 300 kilometres, from Oradea to Cluj-Napoca and back in a fundraising action for MS persons. We have been supported by other associations like Asociația Filantropia of the Orthodox Church and the Rotary Club.

<http://valentinserac.wordpress.com/?s=tur+ciclist> and

<http://www.crisana.ro/stiri/actualitate-13/au-luat-la-pedala-traseul-oradea-cluj-napoca-pentru-o-cauza-nobila-100038.html>

Due to the partnership APK Muntenia have with Special Olympics (SO) Romania Foundation, projects with the following objectives were organised:

- To enhance the capacity of the two organization to provide health education support to SO athletes, family members and caregivers, and SO coaches during on-going SO programmes and at local and national competitions
- To increase the access of SO athletes in Romania, and in particular of those living in rural communities outside the capital, to health-related information, encouragement and family support they need to develop healthy practices, carry out physical fitness exercises and live healthy lives.
- To increase knowledge among SO volunteers, physicians, Physiotherapists and future clinicians (students) of specific health issues confronting SO athletes, ways to address these issues and to educate and promote healthy lifestyle habits among SO athletes and their families, caregivers and coaches.

The events were carried out during local and national competitions in Romania, the most important event being the Health Day hosted during the SO National games. These evaluations had a crucial role in determining the current health situation of SO athletes, identifying their health habits, and providing key guidelines to athletes, as well as their family members and caregivers on how to change their habits to increase and maintain their health in future years.

Spain

Promotes physiotherapists as exercise experts in 30 National Sporting events such as golf, athletic and football championships. Volunteers give assistance and information to all the participants about the importance on physiotherapy in the sport.

Have organised:

- 11 national congresses that focus on the role of Physiotherapist in Physical Activity.
- 1 International congress that focused on Sport Physical Therapy
- 3 regional congresses about this subject. The coordinator of the sections dedicated to this field participated in three international congresses.

Promotes World Physical Therapy Day every year with press releases, conferences etc.

Sweden

Had a campaign about avoiding the use of the car for shorter journeys. Sweden has Physical Activity on prescription and several of the chapters are written by physiotherapists. It has as a network for physiotherapists working with Physical Activity on Prescription. It also has national multi professional guidelines on disease prevention methods. The MO is very active in implementing these guidelines and has a project running, founded by the National Board of Health and Welfare.

Switzerland

Every two years, Physioswiss runs a campaign through the whole country with a truck, containing several stations where people can test the health status in a special field. One year the theme was "Health of the Back". A physiotherapist travels in the truck and advises individuals.

Physioswiss is taking position in the media on all public matters where physiotherapy is concerned. This contains consultation, reports in newspapers (through press releases).

The U.K.

Move for Health is a public facing campaign launched in 2008. It aims to contribute towards a collective responsibility to address public health, educate patients and the public on the health benefits of physical activity. This is achieved through:

a) Motivating, educating and supporting members to undertake health promotion activities, in particular the promotion of physical activity

This is carried out through presentation at member events, production and dissemination of best practice guidelines, public health news and public health policy updates. In addition, there is a register of over 200 Move for Health "Champions" (now renamed Public Health Champions) members who are passionate about health promotion and physical activity. These Champions help to spread the messages and motivate the wider membership and promote the support material and updates produced by the Move for Health team. A number of champions also run public health promotion and physical activity events in their local communities.

b) Public relations activities that promote public health messages (particularly around physical activity) and that physiotherapists are experts in this field.

Publications include leaflets aimed at the general public (Easy Exercise Guide, Fit for the Future, Fit for Work, Fit for Active Work) and reports aimed at health professionals and employers (Sickness Costs, Fitness Profits).

Other public relations activities include:

- Healthy School Days (annually). Chartered Physiotherapists and Dieticians teaming up to deliver health promotion events within schools, over one week in July. In 2010 events were held in 24 schools with over 4,000 children reached.
- Stands and presentations at national events, e.g. Health, Work and Wellbeing.

- Responding to government public health consultations.
- Representative on the “Physical Activity Network” of the English Government’s Responsibility Deals. The Responsibility Deals, which also cover alcohol, food, health at work and behaviour change aims to ensure that the Government, businesses and organisations work together to achieve positive societal changes.

c) *Partnership activity with a range of national and local stakeholders who can support this area of work.*

Partnerships include:

- Fitness Industry Association
- Joint Consultative Forum – representatives from royal medical colleges, fitness sector and CSP, tasked with producing Professional and Operational Standards for Exercise Referral.
- Register of Exercise Professionals and Skills Active (the Sector Skills Council for Active Leisure, Learning and Well- being working)
- British Heart Foundation
- National Coalition for Active Aging
- Change4Life

The CSP believes that, as experts in movement, physiotherapists can enable patients to be physically active to promote good health, not just return to function, in a way that is safe and appropriate for them and must market their ability to do so to other clinical professionals and local decision makers. To this effect, it has continued to work on motivating and supporting members to undertake physical activity interventions in the course of their daily work.

In addition the CSP in 2013:

- Announced a three-year partnership with Aviva, the UK’s largest insurer, across their Fit for Work initiative
- Organized the third annual awareness raising Workout at Work Day (W@WD) 2013 which aims to encourage people to be more physically active at work and highlights simple changes that anyone can make to their daily routine which will help them stay healthy and fit for work.
- Produced a number of ‘Physiotherapy Works’ leaflets - Evidence-based briefings, which demonstrate the effectiveness of physiotherapy, and in the case of Cancer, Cystic Fibrosis, Dementia, Fragility fracture and falls, and Stroke, the effectiveness of physiotherapy-led physical activity interventions
- Produced a set of postcards for members of the public entitled ‘Do you sit at your desk all day? – Does your 9-5 leave no time for structured exercise?’ with tips on staying fit in the workplace.

Specific initiatives for Older People

Ireland:	Prepared a submission for a national dementia strategy which included the evidence of the benefit of physical activity as both a contributor to prevention and treatment of dementia
Malta	Through the special interest group 'Active for life' MO made recommendations to update information on a falls prevention leaflet used in the national health system.
Netherlands	The Dutch Association of Geriatric Physical Therapy is a partner of The Healthy Ageing Network North Netherlands . There is a platform focused on the promotion of healthy lifestyle in senior citizens.
Norway	Participates in a reablement coalition project. The focus is on using physical activity/exercise to keep function for independent daily activities and fall prevention.
Spain:	Is involved in the National Strategy for chronic conditions and included as one of its objectives “ to increase participation of Physiotherapists at primary care in physical activity programmes to prevent chronic conditions”.
Sweden	Active in work related to physical activity and training for elderly people. Together with national authorities it is starting a project which aims at improving rehabilitation for elderly
UK	Promotion of the role of physical activity in Dementia and Fragility Fractures and Falls

9. Authors and Acknowledgements

Esther-Mary D'Arcy (Ireland), Malene Haneborg (Norway), Natalie Beswetherick (UK) and Philip van der Wees (Netherlands)

Acknowledgements

ERWCPT wishes to thank:

The Norwegian Association for permission to use its document in the development of this briefing paper.

Avril Copeland, Éadaoin O'Hanlon, Stephen White, Colm Mullen, Ciaran O'Shaughnessy and Dermot Austin (Ireland)

10. Appendices

Appendix 1 – WCPT Policy Statement: Physical therapists as exercise experts across the life span

The World Confederation for Physical Therapy (WCPT) believes that with growing numbers of people leading increasingly sedentary lifestyles, it is imperative that effective strategies for exercise across the lifespan are implemented. As experts in movement and exercise and with a thorough knowledge of risk factors and pathology and their effects on all systems, physiotherapists are the ideal professionals to promote, guide, prescribe and manage exercise activities and efforts. Exercise promotes wellbeing and fitness. It is a powerful intervention for strength, power, endurance, flexibility, balance, relaxation, and the remediation of patho-physiology, impairments, activity limitations and participation restrictions. Regular exercise also helps open up the potential of physical activity as a means of recreation.

To promote the role of physiotherapists as exercise experts, WCPT encourages and supports member organisations to do the following.

- Assure a comprehensive knowledge base in physiotherapist professional education, particularly regarding the examination/assessment and intervention/treatment of patients'/clients' exercise needs across the life span. This will be accomplished through, but not limited to:
 - the curriculum content on exercise and physical activity in all physiotherapist entry level professional education programmes
 - inclusion in the curriculum of the multifaceted nature of physiological decline that occurs across the age span
 - educational materials about the unique opportunities physical therapists have to promote physical wellbeing for patients/clients through exercise
 - educational and practice resources about exercise for patients/clients
 - inclusion of evidence based exercise education programmes for patient/clients at WCPT, regional and national conferences
 - continuing education programmes on exercise prescription for patients/clients
- Support practice guidelines for safe and effective exercise parameters for patients/clients across the life span including:
 - guidelines for safe exercise programmes for patients/clients based on available evidence
 - guidelines for screening programmes (e.g. community, school, senior citizen programme) assessing exercise needs
- Enable consistent integration of the best evidence to support exercise across the life span by:
 - utilising existing databases and evidence-based literature on exercise for patients/clients

- publicising funding sources for research on exercise programmes for patients/clients
- Educate professional communities about the role and benefits of physiotherapists as exercise experts for patients/clients across the life span through:
 - information in professional publications on exercise for patients/clients
 - regional networking groups
 - raising awareness within the medical profession of the important role of physiotherapists as exercise experts in the provision of exercise programmes for patients/clients
 - information exchange (erg websites, forums) between physiotherapists on exercise for patients/clients
- Educate consumer communities on the role and benefits of physiotherapists as exercise experts for patients/clients across the life span through:
 - coordinating communications strategies to inform the public
 - providing resource materials (e.g. websites, brochures, interactive formats) for the public on the role of physiotherapists in exercise programmes;
 - establishing links with related organisations and groups (e.g. World Health Organization, schools, retired persons groups, osteoporosis groups, diabetes foundations) to cooperate and develop common goals and promote the role of physiotherapists as exercise experts for patients/clients

Appendix 2 – EU Physical Activity Guidelines Recommended Policy Action in support of Health-Enhancing Physical Activity 2008- Guidelines

1. In accordance with the guidance documents of the World Health Organisation, the European Union and its member states recommend a minimum of 60 minutes of daily moderate- intensity physical activity for children and young people and a minimum of 30 minutes daily moderate-intensity physical activity for adults and seniors.
2. All relevant actors should refer to the guidance documents of the World Health Organisation regarding Obesity and physical activity and seek ways to implement them.
3. Public authorities responsible for different sectors should support each other through cross sectoral co-operation to implement policies that can make it easier and more attractive for individuals to increase their level of physical activity.
4. Authorities responsible for the implementation of sport and physical activity guidelines should consider the use of agreements between central, regional and local government to promote sport and physical activity. Where appropriate, such agreements can involve specific reward mechanisms. Links between sport and physical activity strategies should be encouraged.
5. Governments should launch initiatives to coordinate and promote public and private funding devoted to physical activity and to facilitate access for the whole population.
6. When public authorities (National, regional, local) support sport through public budgets, particular attention should be given to projects and organisations which allow a maximum of people to engage in physical activity, regardless of their level of performance ('sport for all', recreational sport)
7. When public authorities (national, regional, local) support sport through public budgets, appropriate management and evaluation mechanisms should be in place to ensure a follow-up that is in line with the objective of promoting 'sport for all'
8. When public grants are made available for activities with physical activity content, the eligibility and allocation criteria should be based on activities foreseen, and on the general activities of the organisations applying for funding. A specific legal status, organisational history or membership in larger federative structures should not be considered as pre-qualifying. Funding should be directed toward 'sport for all' activities bearing in mind that organisations with an elite sport component may also make a meaningful contribution to the 'sport for all' agenda. Public and private sectors should be able to compete for funding on an equal footing.
9. Sport policy should be evidence-based and public funding for sport science should encourage research that seeks to uncover new knowledge about activities that allow the population at large to be physically active.
10. Sport Organisations should provide activities and events attractive to everyone, and encourage contacts between people from different social groups and with different capabilities, regardless of race, ethnicity, religion, age gender, nationality and physical and mental health.

11. Sport organisations should cooperate with universities and higher vocational schools to develop training programmes for coaches, instructors and other sport professionals aimed to advise and rescribe physical activity for sedentary individuals and those with motor or mental disabilities who wish to take up a particular sport.
12. Low barrier Health related exercise programmes targeting as many social and age groups, and including as many sport disciplines as possible (athletics, jogging, swimming, ball sports, strength and cardiovascular training, courses for seniors and youths) should become an integral part of the offerings of sport organisations.
13. Sport organisations embody a unique potential in prevention and health promotion, which should be drawn upon and further developed. Sport organisations gain a special significance for health policies if they can offer quality-tested and cost effective programmes in prevention and health promotion.
14. Physical Activity data should be included in health monitoring systems at national level.
15. Public authorities should identify the professions that have the competences necessary to promote physical activity and consider how the relevant professional roles may be facilitated through appropriate recognition systems.
16. Medical practitioners and other health professionals should act as facilitators between health insurance providers, their members or clients, and providers of physical activity programmes.
17. Insurance companies should be encouraged to reimburse medical doctors (GP's or specialists) for an annual discussion advising each patient on how to include physical activity into their daily life.
18. Public authorities should encourage health insurance schemes to become a main actor in the promotion of physical activity.
19. Health insurance schemes should encourage clients to be physically active and should offer financial incentives. Physical activity upon prescription should become available in all EU Member states.
20. In member states where treatment is provided free of charge, the public health system should try through those channels to encourage physical activity in all age groups, including by introducing bonuses for physically active people and encouraging health fitness professionals to promote physical activity as part of a prevention strategy.
21. EU Member States should collect, summarise and evaluate national guidelines for physical activity addressed to physical education teachers and other actors in the development of children and youth.
22. As a second step, EU Member States could design Health enhancing physical education modules for the training of teachers in, respectively, kindergartens, primary schools and secondary schools.
23. Information about the need for physical activity, the best way to introduce it in everyday life and changes in lifestyle should be available to physical education

- teachers, health professionals, trainers, managers of sport and leisure centres and media professionals in the course of their studies and/or professional training.
24. Topics related to physical activity, health promotion and sports medicine should be integrated into the curricula of Health professions in the EU.
 25. In all parts of their territory which are suitable for commuter cycling, Member state Authorities at National, Regional and Local levels should plan and create appropriate infrastructure to allow citizens to cycle to school and work.
 26. Other types of active commuting should be systematically considered in National, Regional and local planning documents, the aim of which should be to ensure safety, comfort and viability.
 27. Investments in infrastructure for commuter cycling and walking should be accompanied by targeted information campaigns to explain health benefits of active commuting.
 28. When planning authorities give permits to build new developments, or when public authorities build new neighbourhoods themselves, they should integrate in their authorisation or in their planning the need to create a safe environment for the practice of physical activity by the local population. In addition, they should also consider distances and ensure opportunities for walking or cycling from home to train stations, bus stops, shops and other services to recreational places.
 29. Local governments should consider cycling as an integral part of town planning and engineering. Cycle tracks and parking spaces should be designed, developed and maintained in respect of basic safety requirements. Local governments are encouraged to exchange best practice throughout the EU to find the most suitable economic and practical solutions.
 30. Public authorities responsible for traffic police services should ensure that appropriate levels of safety are provided for pedestrians and cyclists.
 31. Public authorities should pursue not only the protection of the natural environment per se but also its potential to provide attractive outdoor spaces for physical activity. Effective conflict management should be put in place to balance the needs of different users, particularly motorised versus non motorised visitors.
 32. Public authorities should seek to ensure that children's play needs are not marginalised in community planning and design.
 33. In their agreements, employers and trade unions should include requirements for the workplace which facilitate a physically active lifestyle. Examples of such requirements include(1) Access to adequately equipped indoor and outdoor exercise facilities (2) Availability, on a regular basis, of a physical activity professional for joint exercise activity as well as for individual advice and instruction (3) Support for workplace related sport participation (4) Support for using cycling and walking as transportation to and from the workplace (5) If the work is monotonous or heavy to the extent that it implies an increased risk of skeletal muscle disorders, access to exercises specifically designed to counteract these diseases (6) a physical activity-friendly working environment.

34. National Health certificates could be awarded to workplaces where a healthy physically active lifestyle is given high priority.
35. In view of increasing longevity in European societies, EU Member states should increase research into the link between physical activity of senior citizens and their psychological and physiological health as well as into the identification of means to enhance awareness of the importance of being physically active.
36. Public Authorities should provide facilities which make physical activity more accessible and attractive to elderly people, being aware that spending money on such facilities will save money on medical treatment.
37. Special attention should be paid by personnel in charge of caring for elderly people at home and in institutions to ensure that suitable amounts of exercise, compatible with health conditions are maintained.
38. The implementation of policy actions for physical activity promotion should be monitored regularly, based on pre-defined indicators to allow for evaluation and review.
39. To have an impact, public awareness campaigns should be combined with other forms of intervention within a coherent strategy.
40. The dissemination and implementation of these EU Physical Activity Guidelines at EU level should be supported through an EU HEPA Network based on the existing European Network for the promotion of Health-enhancing physical activity (HEPA Europe)
41. The European Commission is called upon to consider how best to give financial support to an EU HEPA Network for this purpose and how to involve the Network in the implementation and assessment of HEPA-related projects and the dissemination of results.

All the above 41 guidelines are the EU Physical Activity Guidelines- Recommended Policy Actions in Support of Health-enhancing Physical Activity as approved by the EU working group of 'Sport and Health' at a meeting on 25th September 2008 and confirmed by EU Member State Sport ministers in Biarritz on 27th and 28th November 2008.

Appendix 3 – Member Organisations whose country has national guidelines on physical activity/exercise or fitness

Austria	National Action Plan for Movement (NAPB) and national health objectives (Nationale Rahmengesundheitsziele) have been defined. Implementation plans are currently being prepared.	www.napbewegung.at www.gesundheitsziele-oesterreich.at
Cyprus	National Schemes: 1. Sports for All 2. Euro-sport Health Project 3. National Sport Development Supports Scheme	http://cyprussports.org/uk/
Denmark	The National Board of Health, Denmark, has national guidelines on physical activity for children, for adults and for elderly people and has national prevention tools for physical activity.	http://www.sst.dk/Sundhed%20og%20forebyggelse/Fysisk%20aktivitet.aspx http://sundhedsstyrelsen.dk/publ/Publ2013/05maj/ForebygPk/FysiskAktivitet2udg.pdf
Estonia	National Institute for Health Development. Institute has developed documents like “National Strategy for Prevention of Cardio-vascular Diseases 2005-2020”, “National health Promoting Networks”, and Promoting Children and Youth Health”, “Health Promotion on County Level”. All health occupations organisations representatives, including Estonian Association of Physiotherapist were involved in developing these documents.	http://www.tai.ee/?id=1646
Finland	National guidelines for children, adults and elderly people by National Ministry of Education and Culture and/or Ministry of Social Affairs and Health. Only in Finnish. Current Care Guidelines (evidence-based clinical practice guidelines): Physical activity and exercise training. Summary in English: The guideline for health-enhancing physical activity for adults (aged 18—64): Physical Activity Pie by the UKK Institute. In English: Specific national guidelines developed by MO: Evidence-Based Physiotherapy in knee and hip osteoarthritis, summary in English: Physiotherapy guidelines for preventing falls and fall-related injuries, summary in English: Exercise-based cardiac rehabilitation for coronary artery disease, summary in English: The National Policy Programme for Older People’s Physical Activity; Health and well-being from physical activity (Publications of the Ministry of Education and Culture 2012:17) On the move. National strategy for physical activity promoting health and wellbeing 2020 (Publications of the Ministry of Social Affairs and Health 2013:14) Current Care Guidelines (evidence-based clinical practice guidelines): Physical activity and exercise training. Summary in English (Finnish Medical Society)	http://www.kaypahoito.fi/web/english/summaries/naytaartikkeli/tunnus/ccs00049 http://www.ukkinstituutti.fi/en/products/physical_activity_pie http://www.terveysportti.fi/dtk/sfs/avaa?p_artikkeli=sfy00007 http://www.terveysportti.fi/dtk/sfs/avaa?p_artikkeli=sfy00014 http://www.terveysportti.fi/dtk/sfs/avaa?p_artikkeli=sfy00009
Germany	Gesundheit durch Bewegung fördern (Bundesvereinigung Prävention und Gesundheitsförderung e.V.) Präventionskampagne der Deutschen gesetzl. Unfallversicherung: "Denk an mich. Dein Rücken"	
Iceland	Ráðleggingar um hreyfingu	http://www.lydheilsustod.is/media/lydh_eilsa/NM30399_hreyfiradleggingar_baeklingur_lores_net.pdf
Ireland	The National Guidelines on Physical Activity in Ireland (2009).	http://www.dohc.ie/publications/pdf/active_guidelines.pdf?direct=1

	Get Active Ireland www.Littlesteps.eu	
Liechtenstein	The government (through the Department of Health) is responsible for promotion of physical activity. There are a lot of infrastructures for any kind of physical activity for people at every age	
Netherlands	<p>KNGF-guidelines at:</p> <ul style="list-style-type: none"> -Guidelines-in-English (13 of 18 guidelines also in English) -5 Standard Movement Interventions, which mostly focus on (secondary) prevention and behavioural changes necessary for an active lifestyle in chronic diseases (osteoporosis, osteoarthritis, diabetes, COPD and CHDs) -Evidence Statement (also in Dutch) on subacromial shoulder pain. An Evidence Statement formulates answers to questions arising from a bottleneck in the physical therapy practice. <p>A second Evidence Statement on physical therapy in breast cancer is being developed and will soon be available.</p> <p>KNGF participates in the development of multidisciplinary guidelines. They consist of subject-specific evidence-based recommendations.</p> <p>The guidelines contribute to optimal care and provide support in clinical decision making. General information on the guidelines can be found on the CBO website</p>	<p>https://www.kngfrichtlijnen.nl/654/KNGF</p> <p>http://www.fysionet.nl/producten-diensten/kennisplein/vakinhoud/standaarden-beweeginterventies/downloads.html</p> <p>https://www.kngfrichtlijnen.nl/657/Evidence-Statements.htm</p> <p>(http://www.cbo.nl/en/)</p>
Norway	An instruction book that systematically reviews physical activity/exercise is produced for different diagnoses and for population groups, prevention and treatment. National guidelines for physical activity for elderly, grown-ups, children and pregnancy (in Norwegian) based on Nordic Nutrition Recommendations Aktivitetshåndboken (FYSS) – guideline for physical activity in prevention, treatment and rehabilitation	<p>http://www.norden.org/en/theme/nordic-nutrition-recommendation/how-to-get-the-nordic-nutrition-recommendations-2012</p> <p>http://helsedirektoratet.no/publikasjoner/aktivitetshandboken-fysisk-aktivitet-i-forebygging-og-behandling/Sider/default.aspx</p>
Poland	Keep Fit Poland	www.pfpz.pl
Slovenia	Moving for Health	http://cindi-slovenija.net/index.php?option=com_content&task=view&id=133&Itemid=66
Spain	<p>Health Ministry-National Strategy for nutrition, physical activity and prevention of obesity (NAOS)</p> <p>Naos Strategy-Perseo program to promote physical activity and nutrition in children- a guide for families. Spanish</p> <p>Naos Strategy-Perseo Program. Guide for childhood obesity care at primary care health professionals. Spanish</p> <p>Naos Strategy-Perseo Program. A guide for pupils</p>	<p>http://www.naos.aesan.msssi.gob.es/naos/ficheros/estrategia/NAOS_Strategy.pdf</p> <p>http://www.perseo.aesan.mspes.es/docs/docs/quias/guia_familias_af.pdf</p> <p>http://www.perseo.aesan.mspes.es/docs/docs/quias/guia_obesidad_infantil_profesionales_sanitarios_atencion primaria.pdf</p> <p>http://www.perseo.aesan.mspes.es/docs/docs/quias/cuaderno_alumnado_af.pdf</p>
Sweden	The document Physical activity in the prevention and treatment of disease summarizes the up-to-date scientific knowledge on how to prevent and treat various diseases and conditions using physical activity	<p>www.fyss.se</p> <p>www.fhi.se</p> <p>http://www.socialstyrelsen.se/nationell-riktlinjerforforsjukdomsforebyggandemetoder</p>
Switzerland	<p>Nationales Programme Ernährung und Bewegung (NPEB) 2008-2012 has been extended by the authorities until 2016)</p> <p>Therapie-Programme für übergewichtige Kinder und Übernahme der Kosten durch die obligatorische Krankenpflegeversicherung (OKP)</p>	<p>http://www.bag.admin.ch/themen/ernaehrung_bewegung/13227/index.html?lang=de</p> <p>http://www.news.admin.ch/message/index.html?lang=de&msg-id=51442</p>

<p>United Kingdom</p>	<p>Department of Health Physical Activity Health Improvement and Protection. Start active, stay active: a report on physical activity from the four home countries' Chief Medical Officers. 2011.</p> <ul style="list-style-type: none"> • “At least five a week” - Evidence on the impact of physical activity and its relationship to health and guidelines for physical activity produced by Department of Health Chief Medical Officer (2004) • “Let’s Get Moving” - A Department of Health physical activity care pathway for the NHS (2009) <p>NICE Guidance:</p> <ul style="list-style-type: none"> • “Four commonly used methods to increase physical activity” -2006. • “Promoting physical activity, active play and sport for pre-school and school-age children and young people in family, pre-school, school and community settings” 2009. • “Promoting physical activity in the workplace”. 2008. <ul style="list-style-type: none"> • Physical activity: brief advice for adults in primary care • Walking and cycling: local measures to promote walking and cycling as forms of travel or recreation • Physical activity and the environment • Occupational therapy and physical activity interventions to promote the mental wellbeing of older people in primary care and residential care • DH Guidance • UK Physical Activity guidance (2011) • Physical Activity Network: Delivering our collective pledges (2011) • Let’s Get Moving Commissioning Guidance A physical activity care pathway(2012) 	<p>http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4080981.pdf http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_105945 http://www.nice.org.uk/PH1002</p> <p>http://publications.nice.org.uk/four-commonly-used-methods-to-increase-physical-activity-ph2</p> <p>http://www.nice.org.uk/PH17</p> <p>http://www.nice.org.uk/PH013 http://publications.nice.org.uk/physical-activity-brief-advice-for-adults-in-primary-care-ph44 http://publications.nice.org.uk/walking-and-cycling-local-measures-to-promote-walking-and-cycling-as-forms-of-travel-or-recreation-ph41 http://publications.nice.org.uk/physical-activity-and-the-environment-ph8 http://publications.nice.org.uk/occupational-therapy-and-physical-activity-interventions-to-promote-the-mental-wellbeing-of-older-ph16 https://www.gov.uk/government/publications/uk-physical-activity-guidelines https://www.gov.uk/government/publications/physical-activity-network-delivering-our-collective-pledges https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216262/dh_133101.pdf</p>
------------------------------	---	--

Appendix 4 Useful websites/organisations/programmes/ projects and reports for Member Organisations

1. World Health Organisation (WHO)

- 1) WHO Regional Office for Europe - Copenhagen, Denmark www.euro.who.int
-ER-WCPT participates in the annual meetings
- 2) WHO European Office for Investment for Health and Development - Venice, Italy
- 3) WHO - Health Impact Assessment (HIA)
- 4) WHO collaborating Centre on Physical Activity and Health Promotion The UKK Institute for Health Promotion Research, (Finland)
http://www.ukkinstituutti.fi/index_en.html
- 5) WHO Health Promoting Schools – www.who.euro.who.int/healthy_schools
- 6) WHO Health Promoting Hospitals- www.who.euro.who.int/healthy_hospitals
- 7) WHO Countrywide Integrated Noncommunicable Diseases Intervention programme CINDI
- 8) WHO Global Physical Activity Surveillance GPAQ
- 9) WHO Global School-based Student Health Survey (WHO survey project) GSHS
- 10) WHO Health Behaviour in school aged Children (WHO Report/Research study) HBSC

2. International

- 1) **IPAQ** International Physical Activity Questionnaire (with well developed instruments that can be used internationally to obtain comparable estimates of physical activity)
 - a. **International professional organisations (for individual membership – offering network and journal services)**
- 2) **IPEN** International Physical Activity and the Environment Network (for individuals to join)
- 3) International Society for Physical Activity and Health (ISPAH) www.ispah.org
 - a. ISPAH is an international professional society of individual members who are interested in advancing the science and practice of physical activity and health.
- 4) International Society for Aging and Physical Activity (ISAPA) www.isapa.org
 - a. ISAPA is an international not-for-profit society promoting research, clinical practice, and public policy initiatives in the area of aging and physical activity.
- 5) International Society for Behavioral Nutrition and Physical Activity (ISBNPA) www.isbnpa.org ISBNPA advances and fosters excellence in research on nutrition, behaviour and physical activity.

3. Europe

- 1) [EUNAAPA](#) European Network for Action on Ageing and Physical Activity (membership on a personal basis)
- 2) Euro Health Net (www.eurohealthnet.eu) – National Health Promotion Agency – a not-for-profit network of regional and national agencies responsible and accountable for health promotion and disease prevention in Europe. A member of the EHF and EPHA
- 3) EUPHIX www.EUPHIX.org the Public Health Information System – developed with funding from the European commission and several EU Member States as a prototype for a web based European public health reporting and monitoring system.
- 4) European Observatory on Health Systems and Policies - Brussels, Belgium
- 5) Directorate-General for Health and Consumers (DG SANCO)
- 6) EU Health Strategy
- 7) EU Health Portal
- 8) EU and Health Inequalities
- 9) Health in All Policies
- 10) Health Programme
- 11) 7th Framework Programme (DG Research)
- 12) EU Environment and Health Research Activities
- 13) IUHPE - The International Union for Health Promotion and Education
- 14) EUPHA - European Public Health Association – (similar to EPHA)
- 15) AGE - European Older People's Platform
- 16) [Diet, Physical Activity and Health - EU Platform for Action](#) a Working Group of the European Commission
- 17) European Health Survey System [EHSS](#)
- 18) European network for the promotion of health-enhancing physical activity [HEPA Europe](#),
- 19) European Network for prevention and health promotion (individual membership) EOROPREV
- 20) [EUNAAPA](#) European Network for Action on Ageing and Physical Activity (membership on a personal basis)
- 21) [EUPASS](#) European Physical Activity Surveillance System (EU funded project)
- 22) European Physical Activity Surveillance System (EU funded project)
- 23) [PANACEA](#) Physical Activity, Nutrition, Alcohol, Cessation of Smoking, Eating out of home and obesity (EU project)
- 24) [ENHR II](#), European Nutrition and Health Report 2009 (Report)
- 25) [European Nutrition and Health Report](#) (EU Report)
- 26) Shape up Europe

4. Countries

- 1) **ALPHA** Assessment of Level of Physical Activity and Fitness (German national institute)
- 2) **FINBALT Health Monitor** – a collaborative system for monitoring health related behaviour, practices and lifestyles (such as smoking, alcohol consumption, food habits and physical activity) in Estonia, Finland, Latvia and Lithuania.
- 3) Global Advocacy Council for Physical activity www.globalpa.org.co.uk (part of ISPAH)

11. References

- 1 WHO. Geneva: WHO, 2006. Global NCD Infobase 2006
- 2 2008 Physical Activity Guidelines for Americans." *Health.gov | Your Portal to Health information from the U.S. Government*. 1 Jan. 2008. Web. 22 Jan. 2011. <<http://www.health.gov/paguidelines/>>.
- 3 Sallis, R. E. "Exercise Is Medicine and Physicians Need to Prescribe It! -- Sallis 43 (1): 3 -- British Journal of Sports Medicine." *British Journal of Sports Medicine - BMJ Journals*. Feb. 2009. Web. 22 Jan. 2011. <<http://bjsm.bmj.com/content/43/1/3.full>>.
- 4 *Global Recommendations on Physical Activity for Health*. Geneva, Switzerland: World Health Organization, 2010. Print.
- 5 *A Guide for Population Based Approaches to Increasing Levels of Physical Activity*. Geneva, Switzerland: World Health Organization, 2007. Print.
- 6 Kesaniemi, Antero, Chris J. Riddoch, Bruce Reeder, Steven N. Blair, and Thorkild IA Sorensen. "Advancing the 11Future of Physical Activity Guidelines in Canada: an Independent Expert Panel Interpretation of the Evidence." *International Journal of Behavioral Nutrition and Physical Activity* 7.41 (2010): 0-14. Print
- 7 Warburton, D. E.R. "Health Benefits of Physical Activity: the Evidence." *Canadian Medical Association Journal* 174.6 (2006): 801-09. Print.
- 8 "Dose-Response Issues Concerning the Relations between Regular Physical Activity and Health." *President's Council on Fitness, Sports & Nutrition*. 1 Sept. 2002. Web. 22 Jan. 2011. <http://www.fitness.gov/publications/digests/pcpfs_research_digs.html>
- 9 More Physical activity. Shdir websites <http://www.shdir.no/> 2009.
- 10 Sjostrom, M Health Enhancing Physical Activity across EU countries – the Eurobarometer Study. *Jn of Public Health* 2006 Vol. 14 No.5 291-300
- 11 WHO Europe 2007 Steps to Health - A European Framework to promote Physical Activity for Health 2007 - Adapted from: Colman R, Walker S. *The Costs of Physical Inactivity in British Columbia*. British Columbia, Ministry of Health Services, 2004.
- 12 Tzormpatzakis, N. Sleaf M Participation in physical activity and exercise in Greece: a systematic literature review. *Int. J Public Health*. 2007;52(6):360-71.
- 13 **Resept for et sunnere Norge. Folkehelsepolitikken. . St meld nr16, 2002-2003 Helsedepartementet 2009**
- 14 Department of Health, Ireland The National Guidelines for Physical Activity in Ireland – 2009 Get Active Ireland – Promoting Physical Exercise in Ireland.
- 15 Netherlands Institute for Sports and Exercise (NISB), 2010. www.30minutenbewegen.nl/2010.
- 16 www.nhs.uk/change4life campaign (2009)
- 17 Department of Health Physical Activity Health Improvement and Protection. Start active, stay active: a report on physical activity from the four home countries' Chief Medical Officers. 2011.

- 18 The Centre of Disease Control and Prevention and the American College of Sports Medicine: Physical Activity and Public Health: A Recommendation from the Centres for Disease of Control and Prevention and the American College of Sports Medicine Journal of the American Medical Association 273 402-407 1995
- 19 Foster C, Hillsdon M, Thorogood M. Interventions for promoting physical activity. Cochrane reviews 2005
- 20 CSP (UK) - The Heart of the Matter, CSP Congress Frontline 15 June 2011 Vol. 17 No11 WWW.CSPcongress.co.uk
- 21 Bouchard C, Shephard RJ, Stephens T. Physical activity, fitness and health. Consensus statement. Champaign IL. Human Kinetics Publisher, 1993 2003.
- 22 Health and Social Affairs. Physical activity and health. Recommendations Report 2000;2.
- 23 Caspersen CJ, Powell KE, Christensen GM. Physical activity, exercise and physical fitness: Definitions and distinctions for health-related research. 126-31. Public Health Reports 1985;2:126-31.
- 24 Borg, G. (1998). *Borg's Perceived Exertion and Pain Scales*. Champaign, IL: Human Kinetics.
- 25 Borg, G., & Borg, E. (2001). A new generation of scaling methods: Level-anchored ratio scaling. *Psychologica*, 28, 15-45. [[Full-text](#), PDF, with kind permission from Psychologica]
- 26 Thune I, Smeland S. Is physical activity of significance in treatment and rehabilitation of cancer patients? Temahefte on Physical Activity and Health (2002). *Nor Journal Lægeforening* 2000;27 (59).
- 27 Ekeland E, Heian F, Hagen KB. Can exercise improve self esteem in children and young people? A systematic review of randomized controlled trials . *British Journal of Sports Medicine* 2005;Nov; 39 (11):792-8.
- 28 Larun L, Nordheim LV, Ekeland E, Hagen KB, Heian F. Exercise in prevention and treatment of anxiety and depression among children and young people (Cochrane review) . *Cochrane Database of Systematic Reviews* 2006;(Issue 3).
- 29 American College of Sports Medicine. The recommended quantity and quality of exercise for developing and maintaining cardiorespiratory and muscular fitness and flexibility in healthy adults. *Med Sci Sports Exerc* 1998;30:975-91.
- 30 Henriksson J, Sundberg CJ. Allmänna effects of physical activity. <http://www.fyss.se> 2008;Ch 1.
- 31 Fletcher GF, BValady GJ, Ezra A, Chaitman B, Eckel R, Gleg J, et al. Exercise Standards for Testing and Training. A statement for Healthcare professionals from the American Heart Association 2001;Circulation 2001;104:1964-740.
- 32 Anderssen SA, Strømme SB. Physical activity and health - recommendations. 17, 121:2037-41. *Tidsskr Nor Lægeforening* 2001;17:121:2037-41.
- 33 National Institute for Health and Clinical Excellence. Four commonly used methods to increase physical activity: brief interventions in primary care, exercise referral schemes,

- pedometers and community-based exercise programmes for walking and cycling (PH2). London: National Institute for Health and Clinical Excellence; 2006.
- 34 2008-based national population projections. EUROPOP convergence Scenario 2008
- 35 Dutch Health Council. Guidelines for Healthy Food, Dutch Health Council 2006
- 36 Helbostad JL, Sletvold O, Moe-Nilssen R. Exercise improves physical function and health related quality of life at home and elderly residents with balance and walking difficulties. PT 1. Fysioterapeuten 2005;1.
- 37 Andersen B. Child's physical activity and clustered cardiovascular risk: implications for guidelines. The European Youth heart Study. (Published in the Lancet). NIHS website <http://www.nih.no> 2006.
- 38 ER-WCPT. Pain in the back. <http://www.painintheback.eu/home.html> 2010
- 39 WCPT Policy – Physical Therapists as the Exercise Experts across the Lifespan (2011)
- 40 Vlaeyen JWS, Linton SJ. Fear-avoidance and its consequences in chronic musculoskeletal pain: A state of the art. Pain 2000;85:317-32.
- 41 SBU - Statens beredning for medicinsk utvärdering S. Metoder för att främja aktivitet. A systematic literature review 2006.
- 42 WHO. Geneva: The Ottawa Charter for Health Promotion. (1986)
- 43 Prochaska. J.O and DiClemente CC (1984) The Transtheoretical Approach: crossing traditional boundaries of therapy. Homewood, IL: Dow Jones/Irwin
- 44 Rosenstock, I. (1974). Historical Origins of the Health Belief Model. Health Education Monographs. Vol. 2, No. 4.
- 45 ER-WCPT. Staying Clean. <http://www.stayingclean.eu/home.html> 2010
- 46 Helbostad JL Sletvold O, Moe-Nilssen R. Exercise improves physical function and health related quality of life at home and elderly residents with balance and walking difficulties. PT1.Fysioterapeuten 2005;1
- 47 Pettersen R. Declining trend of old. Tidsskrift Nor Laegeforen 2002;122:631-4.
- 48 Warburton, D. E., G. Gledhill, and A. Quinney. "Musculoskeletal Fitness and Health." *Canadian Journal of Applied Physiology* 26 (2001). Print.
- 49 Warburton, Darren E.R., Norman Gledhill, and Arthur Quinney. "The Effects of Changes in Musculoskeletal Fitness on Health." *Applied Physiology, Nutrition, and Metabolism* 26.2 (2001): 161-216. Print.
- 50 "Department of Health and Ageing - Physical Activity Guidelines." *Department of Health and Ageing - Welcome to the Department of Health and Ageing*. 1 Oct. 2010. Web. 22 Jan. 2011. <<http://www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines>>.
- 51 Hubbard RE, Fallah N, Searle SD, Mitnitski A, Rockwood K (2009) Impact of Exercise in Community-Dwelling Older Adults. PLoS ONE 4(7): e6174. Editor: Joel Gagnier, University of Toronto, Canada
- 52 EU Fit For Work Europe – Musculoskeletal Disorders in the EU workforce DATE

- 53 Arnhof, Y: *Onödig ohalsa. Hälsoläget för personer med funktionsnedsättning*, Statens Folkhälsoinstitut, Østersund R 2008:13
- 54 World Health Organization/World Bank: *World Report on Disability*, WHO 2011
- 55 Perlhagen J, Flod Mark C, Hernell O. Overweight in children - prevention more realistic solution to the problem. *Läkartidningen* 2007;3:138-41.
- 56 Bahr R. Children, physical activity and health. Presentations published on CD from NFFs professional group for sports physio 2007.
- 57 Lien N, Kumar BN, Lien L. Obesity among young people in Oslo. *Tidsskr Nor Lægeforening* 17 2007; 127:2254-8.
- 58 Sagatun A, Søggaard A, Bjertness E., Heyerdal S. Mental health and physical activity among young people - in a multietnisk metropolis. *Sports* 2005;1:11-6.
- 59 Kesaniemi, Antero, Danforth, Elliott, Jensen, Michael, Kopelman, Peter, Le Bvre, Pierre and Reeder, Bruce. "Dose-response Issues concerning Physical Activity and Health: an Evidence-based Symposium." *Medicine and Science in Sports and Exercise* 33.Supplement (2001): S351-358. Print.
- 60 Fredriksen PM, Pettersen SA. Slank with exercise. 1, 21-24 . *Sportsmedicine* 2005;1:21-4.
- 61 Sand O, Sjaastad ØV, Haug E, Bjålle JG. The human body. Physiology and anatomy Gyldendal Norsk Forlag 2006.
- 62 The Chartered Society of Physiotherapy. Fit for the Future. www.csp.org.uk 2009
- 63 Wolff, I., J. J. Van Croonenborg, H. C. G. Kemper, P. J. Kostense, and J. W. R. Twisk. "The Effect of Exercise Training Programs on Bone Mass: A Meta-analysis of Published Controlled Trials in Pre- and Postmenopausal Women." *Osteoporosis International* 9.1 (1999):1-12. Print.
- 64 "Physical Activity - Healthy Living - Public Health Agency of Canada." *Public Health Agency of Canada (PHAC) | Agence De La Sante Publique Du Canada (ASPC)*. Web. 22 Jan. 2011. <<http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/pa-ap/index-eng.php>>
- 65 Claudi T, Cooper JG, Middle Hjøll K, Daae C, Furuseth K, Hanssen K. NSAMs action program for diabetes in general practice. Font Series for Doctors: Education and quality assurance 2000.
- 66 Østensen CG, Birkeland K, Henriksson J. Diabetes mellitus - type 2-diabetes. FYSS 2008; Chapter 24 <http://www.fyss.se>
- 67 Andersen LB, Frøberg K. Aspects in Health of physical activity among children. Institute for Sports and Biomekanik, Southern Danish University 2006.
- 68 Thomas D EENGA. Exercise for type 2 diabetes mellitus. Cochrane Database of Systematic Reviews, Issue 3 Art No: CD002968 DOI: 10 1002/14651858 CD002968 pub2 2006.
- 69 Bauer H PR. Diabetikerschulung. Institut für Physikalische Medizin und Rehabilitation am AKH Linz 2006.

- 70 Sutor, Carol West., and Vivica I. Kraak. *Adequacy of Evidence for Physical Activity Guidelines Development: Workshop Summary*. Washington, D.C.: National Academies, 2007. Print.
- 71 Martinsen E. Physical activity for the minds health. Temahefte on Physical Activity and Health. Journal Nor Lægeforening and SHDir, avd for physical activity 2000.
- 72 Donaghy ME. Exercise can seriously improve your mental health: fact or fiction? *Advances in Physiotherapy* 2007; 9(2):76-88.
- 73 Lee, I. M. "Physical Activity and Cancer Prevention - Data from Epidemiological Studies." *Medice & Science in Sports & Exercise* 35 (2003). Print.
- 74 Holmes MD, Chen WY, Feskanich D, Kroenke CH, Colditz GA. Physical activity and survival after breast cancer diagnosis. *JAMA* 2005; 293:2479-86.
- 75 McNeely ML, Campbell KL, Rowe BH, Klassen TP, Mackey JR, Courneya KS. Effects of exercise on breast cancer patients and survivors: a systematic review and meta-analysis. *CMAJ* 2006; 175:34-41.
- 76 Markes M, Brockow T, Resch K. Exercise for women receiving adjuvant therapy for breast cancer. *Cochrane Database System Rev* 2006;(4):CD005001.
- 77 Mutrie, N. Campbell, AM Whyte, F McConnachie, A Emslie, C Lee, L Kearney, N Walker, A Ritchie, D. Benefits of supervised group exercise programme for women being treated for early stage breast cancer: pragmatic randomised controlled trial *BMJ*. 2007 Mar 10; 334 (7592):517.
- 78 Dimeo, F Schwartz,S. Wesel,N. Voigt,A & . Thiel, E. Effects of an endurance and resistance exercise program on persistent cancer-related fatigue after treatment. *Ann Oncol*. 2008 Aug; 19 (8):1495-9.
- 79 "Physical Activity and Public Health: Updated Recommendation for Adults from the American College of Sports Medicine and the American Heart Association." American College of Sports Medicine, 2007. Web. 22 Jan. 2011. <<http://www.ncbi.nlm.nih.gov/pubmed/17671237>>.
- 80 "An Active Way to Better Health: National Guidelines for Australian Adults." *Department of Health and Ageing - Welcome to the Department of Health and Ageing*. 2005. Web. 22 Jan. 2011. <<http://www.health.gov.au/internet/main/publishing.nsf/content/phd-physical-activity-adults-pdf cnt.htm>>.
- 81 WHO Europe, Methodological Guidance On The Economic Appraisal of Health Effects Related To Walking And Cycling Summary 2008:
- 82 The Toronto Charter for Physical Activity: a Global Call for Action (2010) Global Advocacy Council for Physical Activity.
- 83 EU Physical Activity Guidelines Recommended Policy Action in support of Health-Enhancing Physical Activity 2008- Guidelines
- 84 EU White Paper – Together for Health: A strategic approach for the EU 2008-2013 – EU Commission 2007

- 85 EU White Paper -A Strategy for Europe on Nutrition, Overweight and Obesity related health issues (2007) outlines an integrated approach for Europe to improve healthy nutrition and physical activity.
- 86 WHO Regional Office for Europe - European Charter on Counteracting Obesity - Istanbul, November 2006.
- 87 Haskell LW, Lee IM, Pate RR et al. Physical Activity and Public health: Updated recommendation for adults from the American college of sport medicine and the American Heart Association. *Medicine & Science in Sports & Exercise* 2007; 39: 1423-1434.
- 88 Lee. S., Bacha. F., Hannon. T., Kuk. J.L., Boesch. C., Arslanian. S. (2012). Effects of aerobic versus resistance exercise without caloric restriction on abdominal fat, intrahepatic lipid, and insulin sensitivity in obese adolescent boys: a randomized, controlled trial. *Diabetes*, vol. 61(11) pp 2787-2795
- 89 Bocalini DS, Lima LS, de Andrade S, Madureira A, Rica RL, Dos Santos RN, Serra AJ, Silva JA Jr, Rodriguez D, Figueira A Jr, Pontes FL Jr (2012). Effects of circuit-based exercise programs on the body composition of elderly obese women. *Clinical Interventions in Aging*; 7:551-6.
- 90 Johannsen DL, Redman LM, Ravussin E. (2007). The role of physical activity in maintaining a reduced weight. *Current Atherosclerosis Reports*. 9 (6), 463-471
- 91 Shaw KA, Gennat HC, O'Rourke P, Del Mar C. Exercise for overweight or obesity. *Cochrane Database of Systematic Reviews* 2006, Issue 4. Art. No.: CD003817. DOI: 10.1002/14651858.CD003817.pub3
- 92 Donnelly JE, Blair SN, Jakicic JM, Manore MM, Rankin JW, and Smith BK (2009). American College of Sports Medicine Position Stand. Appropriate physical activity intervention
- 93 Nice Guidelines (2006). Obesity: guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children.
- 94 Wu, Y., Zhang, D., and Kang, S. (2013) 'Physical activity and risk of breast cancer: a meta-analysis of prospective studies', *Breast cancer research and treatment*, 137(3), 869-882.
- 95 Steindorf, K. (2013) 'The role of physical activity in primary cancer prevention', *European Review of Aging and Physical Activity*, 1-4.
- 96 Loprinzi, P.D. and Cardinal, B.J. (2012) 'Effects of physical activity on common side effects of breast cancer treatment', *Breast cancer*, 19(1), 4-10.
- 97 Mishra, S.I., Scherer, R.W., Snyder, C., Geigle, P.M., Berlanstein, D.R., and Topaloglu, O. (2012) 'Exercise interventions on health-related quality of life for people with cancer during active treatment', *Cochrane Database of Systematic Reviews*, Issue 8. Art. No.: CD008465. DOI: 10.1002/14651858.CD008465.pub2.
- 98 Mishra, S.I., Scherer, R.W., Geigle, P.M., Berlanstein, D.R., Topaloglu, O., Gotay, C.C., and Snyder, C. (2012) 'Exercise interventions on health-related quality of life for cancer survivors', *Cochrane Database of Systematic Reviews*, Issue 8. Art. No.: CD007566. DOI: 10.1002/14651858.CD007566.pub2.
- 99 Davies, N.J., Batehup, L. and Thomas, R. (2011) 'The role of diet and physical activity in breast, colorectal, and prostate cancer survivorship: a review of the literature', *British journal of cancer*, 105, S52-S73.

- 100 Ballard-Barbash, R., Friedenreich, C.M., Courneya, K.S., Siddiqi, S.M., McTiernan, A., and Alfano, C.M. (2012) 'Physical activity, biomarkers, and disease outcomes in cancer survivors: a systematic review', *Journal of the National Cancer Institute*, 104(11), 815-840.
- 101 Beasley, J.M., Kwan, M.L., Chen, W.Y., Weltzien, E.K., Kroenke, C.H., Lu, W., Nechuta, S.J., Cadmus-Bertram, L., Patterson, R.E., Sternfeld, B., Shu, X., Pierce, J.P. and Caan, B.J. (2012) 'Meeting the physical activity guidelines and survival after breast cancer: findings from the after breast cancer pooling project', *Breast cancer research and treatment*, 131(2), 637-643.
- 102 102 Friedenreich, C.M., Neilson, H.K., and Lynch, B.M. (2010) 'State of the epidemiological evidence on physical activity and cancer prevention', *European Journal of Cancer*, 46(14), 2593-2604.
- 103 Wolin, K.Y., Yan, Y., Colditz, G.A., and Lee, I.M. (2009) 'Physical activity and colon cancer prevention: a meta-analysis', *British journal of cancer*, 100(4), 611-616.
- 104 Wolin, K.Y., and Tuchman, H. (2011) 'Physical activity and gastrointestinal cancer prevention', In *Physical Activity and Cancer*, Springer: Berlin Heidelberg, p73-100.
104. Lynch, B.M., Cerin, E., Owen, N., Hawkes, A.L., Aitken, J.F. (2008) 'Prospective relationships of physical activity with quality of life among colorectal cancer survivors', *J Clin Oncol*, 26, 4480–4487.
105. Peddle, C.J., Au, H.J., Courneya, K.S. (2008) 'Associations between exercise, quality of life, and fatigue in colorectal cancer survivors', *Dis Colon Rectum*, 51, 1242–1248.
106. Pinto, B.M., Papandonatos, G.D., Goldstein, M.G., Marcus, B.H., and Farrell, N. (2013) 'Home-based physical activity intervention for colorectal cancer survivors', *Psycho Oncology*, 22(1), 54-64.
107. Haydon, A.M., MacInnis, R.J., English, D.R., and Giles, G.G. (2006) 'Effect of physical activity and body size on survival after diagnosis with colorectal cancer', *Gut*, 55(1), 62-67.
108. Meyerhardt, J.A., Giovannucci, E.L., Ogino, S., Kirkner, G.J., Chan, A.T., Willett, W., and Fuchs, C.S. (2009) 'Physical activity and male colorectal cancer survival', *Archives of internal medicine*, 169(22), 2102.
109. Je, Y., Jeon, J.Y., Giovannucci, E.L., and Meyerhardt, J.A. (2013) 'Association between physical activity and mortality in colorectal cancer: A Meta-analysis of prospective cohort studies', *International Journal of Cancer*.
111. Liu, Y., Hu, F., Li, D., Wang, F., Zhu, L., Chen, W., Ge, J., An, R. and, Zhao, Y. (2011) 'Does physical activity reduce the risk of prostate cancer? A systematic review and meta-analysis', *European urology*, 60(5), 1029-1044.
- 112 Johnsen, N.F., Tjønneland, A., Thomsen, B.L., Christensen, J., Loft, S., Friedenreich, C. and, Riboli, E. (2009) 'Physical activity and risk of prostate cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort', *International Journal of Cancer*, 125(4), 902-908.
- 113 Wiggins, M.S., and Simonavice, E.M. (2010) 'Cancer prevention, aerobic capacity, and physical functioning in survivors related to physical activity: a recent review', *Cancer management and research*, 2, 157.
- 114 Keogh, J.W. and MacLeod, R.D. (2012) 'Body composition, physical fitness, functional performance, quality of life, and fatigue benefits of exercise for prostate cancer patients: a systematic review', *Journal of pain and symptom management*, 43(1), 96-110.

- 115 Bourke, L., Doll, H., Crank, H., Daley, A., Rosario, D. and Saxton, J.M. (2011) 'Lifestyle intervention in men with advanced prostate cancer receiving androgen suppression therapy: a feasibility study', *Cancer Epidemiology Biomarkers & Prevention*, 20(4), 647-657.
- 116 Galvão, D.A., Taaffe, D.R., Spry, N., Joseph, D. and Newton, R.U. (2010) 'Combined resistance and aerobic exercise program reverses muscle loss in men undergoing androgen suppression therapy for prostate cancer without bone metastases: a randomized controlled trial', *Journal of clinical oncology*, 28(2), 340-347.
- 117 Kenfield, S.A., Stampfer, M.J., Giovannucci, E. and Chan, J.M. (2011) 'Physical activity and survival after prostate cancer diagnosis in the health professionals follow-up study', *Journal of Clinical Oncology*, 29(6), 726-732.