World Physical Therapy Day

Resources on physical activity and non-communicable diseases

Movement for Health
World Physical Therapy Day

World Confederation for Physical Therapy
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Notes about this booklet

The terms physical therapy and physiotherapy refer to the same profession – some countries use one term, some the other. When the words physical therapy and physical therapist are used in this document, they also refer to physiotherapy and physiotherapist.

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Introduction

This booklet provides facts, research findings, statistics and articles to help you demonstrate the contribution of physical therapists, as part of your World Physical Therapy Day events and campaigns.

World Physical Therapy Day falls on 8th September every year. It is an opportunity for physical therapists (known in some countries as physiotherapists) all over the world to raise awareness about the crucial role their profession plays in making and keeping people well, mobile and independent. The day was established in 1996, by the World Confederation for Physical Therapy – the profession’s global body representing over 350,000 physical therapists in 106 countries.

WCPT has compiled this information for you to use freely. If you’re not sure what to organise for World Physical Therapy Day yet, there are plenty of suggestions in the complementary booklet “World Physical Therapy Day: what to do, how to do it, how to get noticed”.

Here is some basic information about physical therapy for you to copy and use in any material you produce to educate the public. If you refer to “physiotherapists” rather than “physical therapists” in your country, do change the text appropriately.

Physical therapists are experts in developing and maintaining people’s ability to move and function throughout their lives. With an advanced understanding of how the body moves and what keeps it from moving well, they promote wellness, mobility and independence. They treat and prevent many problems caused by pain, illness, impairments and disease, sport and work related injuries, ageing and long periods of inactivity.

Physical therapists work with people affected by a wide range of conditions and symptoms, for example:

• painful conditions such as arthritis, repetitive strain injury, neck and back pain
• cancer
• strokes, Parkinson’s disease and spinal cord injury
• heart problems
• lung disease
• trauma, such as road traffic accidents and landmines
• incontinence

They work in a variety of settings, including hospitals, health centres, sports facilities, education and research centres, hospices and nursing homes, rural and community settings.

Here are some examples of how physical therapists make a difference. They:

• use their skills to treat the underlying causes of pain and limitations in movement and function
• use many treatment approaches to help individuals regain their mobility and maximise their potential
• promote healthy lifestyles and exercise
• treat each patient/client as an individual and thoroughly assess them to identify their needs
• treat sports injuries
• promote safe and healthy activities
• work with children with coordination, balance and other movement problems to improve and maximise their independence.

To achieve all this, physical therapists are educated over several years, giving them a full knowledge of the body’s systems and the skills to treat a wide range of problems. This education is usually university-based and at a level that provides full professional recognition and allows them to practise independently. Continuing education ensures that they keep up to date with the latest advances in research and practice. Many physical therapists are engaged in research themselves.
Facts and figures about physical therapists

Physical therapists work with people of all ages to bring about improvements in their health and independence.

Physical therapists provide exercise prescriptions to help people keep fit and achieve/maintain a healthy weight.

Around 350 million people are obese worldwide. Physical activity is one of the best means of countering obesity.

Children and young people under the age of 18 need 60 minutes of moderate to vigorous physical activity each day to promote and maintain health.

Adults need 30 minutes of moderate physical activity five days a week, or 20 minutes of vigorous physical activity three days a week to maintain health. Plus they need to do muscle strengthening exercises at least twice a week.

Research has shown that physical therapy exercise prescriptions help women who experience incontinence, osteoporosis or breast cancer surgery.

Studies have indicated that physical therapy treatments have a major impact on conditions such as back and neck pain.

Physical activity provided under the guidance and supervision of a physical therapist reduces the risk of heart attack, stroke, type 2 diabetes, colon cancer and breast cancer.

Despite limited numbers of physical therapists in some countries around the world, they have proved their effectiveness at getting and keeping people healthy.

Physical therapists provide exercise programmes for conditions that affect the bones and muscles, such as arthritis, back and neck pain, osteoporosis, joint replacements, and urinary incontinence.

More detailed information about what physical therapists do can be found in WCPT’s Description of Physical Therapy at www.wcpt.org/policy/ps-descriptionPT.
About physical therapy and non-communicable diseases

This is an article by WCPT’s President, Marilyn Moffat, explaining how physical therapists are at the heart of the global battle against non-communicable diseases like stroke, heart disease, chronic respiratory disease, diabetes and cancer.

It can be published in newsletters, magazines and journals, or passed to other publications as background information. If you are making any changes they should be checked with the WCPT Secretariat info@wcpt.org.

In 2011 a high level meeting of world leaders at the United Nations recognised that non-communicable diseases (cardiovascular diseases, chronic respiratory diseases, diabetes and cancer) are an increasing global health challenge. They claim 35 million lives a year – around 60 per cent of deaths.

For physical therapists, the official recognition that a global strategy is required to reduce this burden of disability and deaths is significant. Physical therapists help millions of people every year prevent these conditions and their risk factors – most importantly obesity. They also manage their effects, along with the effects of aging, illness, accidents, and the stresses and strains of life.

Physical therapists specialise in human movement and physical activity, promoting health, fitness, and wellness. They identify physical impairments, activity limitations, and disabilities that prevent people from being as active and independent as they might be, and then they find ways of overcoming them. They maximise people’s movement potential.

So when the World Health Organization points out that physical inactivity is one of the leading risk factors for global mortality, causing 3.2 million deaths annually, and that physical activity can reduce non-communicable diseases, it is clear that the profession has a major part to play.

Many people do not recognise the contribution physical therapists make in keeping people healthy and independent. On World Physical Therapy Day on 8th September, physical therapists have the opportunity to draw attention to their all important roles. I conduct workshops around the world, demonstrating how adults with chronic health problems can improve their health by learning how to exercise safely under the guidance and instruction of physical therapists.

Activity has to be introduced carefully if a person is overweight, unfit, older, or has a chronic disease. Physical therapists do this by examining the person, recommending exercises that are safe and appropriate for them, and educating them about how to look for signs of trouble.

Physical therapy doesn’t just mean more healthy people, but more productive people who can contribute to countries’ economies. Physical therapists’ services are provided in an atmosphere of trust and respect for human dignity and underpinned by sound clinical reasoning and scientific evidence.

These are important messages that physical therapists want to convey to the world every day, but especially on World Physical Therapy Day. The message is clear: physical therapists are movement, physical activity, and exercise experts and a resource in the battle against non-communicable disease that should never be overlooked.

Marilyn Moffat, WCPT President
According to the World Health Organization, childhood obesity "is one of the most serious public health challenges of the 21st century" 
Source: www.who.int/dietphysicalactivity/en/

Obesity in childhood is linked with asthma, musculoskeletal problems, hypertension, early signs of cardiovascular disease, low self-esteem and depression. In the long-term, it can increase the likelihood of being an obese adult, and having a greater risk of cancer, type 2 diabetes and cardiovascular disease. Encouraging children and their families to reach recommended levels of physical activity is a cornerstone of obesity treatment and prevention.

Participation in physical activity helps prevent many chronic diseases. All physical therapists are experts in movement and exercise, and the ways in which it promotes health. Some physical therapists, called paediatric physical therapists, specialise in working with children. A physical therapy assessment is particularly important for children who are obese. The assessment can screen for musculoskeletal impairments and guide therapeutic exercise and physical activity prescription.

**Childhood obesity facts**

Globally, over 40 million preschool children were overweight in 2008. More than 75% of overweight and obese children live in low-and middle-income countries. 
Source: WHO www.who.int/features/factfiles/obesity/en/

Childhood obesity affects people regardless of their income. The problem is global and is steadily affecting many low-and middle-income countries, particularly in urban settings. 
Source: WHO www.who.int/mediacentre/factsheets/fs311/en/

Children’s choices, diet and physical activity habits are influenced by their surrounding environment. 
Source: WHO www.who.int/features/factfiles/obesity/en/

Children who are obese have a high incidence of musculoskeletal impairments. 

Rising levels of childhood obesity are being caused mainly by a shift towards energy-dense foods high in fat and sugars, and decreasing levels of physical activity. 
Source: WHO www.who.int/dietphysicalactivity/childhood/en/

**Defining child obesity**

The World Health Organization defines childhood obesity as having a body mass index (BMI) standardised deviation score (SDS) above 2.0. Childhood growth and BMI should be plotted on WHO age and gender specific charts in tandem with national growth reference charts. Measures of body composition such as waist circumference should be used to describe obesity. 

**Child obesity and physical activity**

The World Health Organization recommends 60 minutes of moderate to vigorous intensity physical activity every day for children aged 5-18. Moderate activity includes activities that raise the heart rate and cause some breathlessness. Vigorous activity is exercise that makes people huff and puff – and could include dancing, household chores and sports like running and football. Activities for children should be fun and age-appropriate. In addition, families should be active together because parents are the most important agents of lifestyle change. 
Physical activity recommendations

Children from birth to age five should engage in daily physical activity that promotes skill in movement and lays the foundations of health-related fitness.
Source: National Association for Sport and Physical Education guidelines on physical activity for children www.aahperd.org/naspe/standards/nationalGuidelines/ActiveStart.cfm

Infants should interact with caregivers in daily physical activities that are dedicated to exploring movement and the environment and that promote skill development in movement.
Source: National Association for Sport and Physical Education guidelines on physical activity for children www.aahperd.org/naspe/standards/nationalGuidelines/ActiveStart.cfm

Toddlers should engage in a total of at least 30 minutes of structured physical activity and at least 60 minutes per day of unstructured physical activity and should not be sedentary for more than 60 minutes at a time, except when sleeping.
Source: www.aahperd.org/naspe/standards/nationalGuidelines/ActiveStart.cfm

Children under five should be physically active daily for at least 180 minutes spread throughout the day.

Children should accumulate at least 60 minutes, and up to several hours, of age-appropriate physical activity on all or most days of the week. This should include moderate and vigorous physical activity with most of the time being spent on activities where exercise is intermittent. Children should participate in several bouts of physical activity lasting 15 minutes or more each day. Periods of inactivity of two or more hours are discouraged for children, especially during the daytime hours.

The role of the physical therapist

In cases of childhood obesity, a physical therapy assessment covers: 1) parental beliefs around healthy childhood growth and development; 2) cardiorespiratory (exercise testing); 3) musculoskeletal (including assessment of range of movement; strength; flexibility; balance; coordination; posture; gait and bony alignment); 4) sedentarism (eg screen-time); 5) sleep; 6) physical activity levels and perceived barriers to reaching recommended levels.

Treatment includes: 1) general health literacy education for child and parent 2) management of any associated conditions (eg painful flat fee, knee pain, weak core) identified in physical assessment; 3) age-appropriate and fun exercise training to increase physical fitness; 4) assisting parent/s to make changes at home to prevent obesity developing or progressing; 5) providing education and practical strategies to improve sleep and energy balance; 6) liaison and onward referral within the interdisciplinary team.

Positive communication between the therapist and family is essential. Many parents may not be aware that their child’s weight is a problem. Ensuring that a holistic assessment is used to identify areas where the child may have functional difficulties (eg balance or low cardiorespiratory fitness) may help the therapist discuss the child’s health without solely focusing on shape or size. In order to facilitate a child’s lifestyle change, it is recommended that the full family works towards this.
Source: Júlíusson PB, et al., Overweight and obesity in Norwegian


A review of evidence on the effect of physical activity on the development of pre-school children concluded that the availability of outside playing areas, and the encouragement and involvement of adults, were important in encouraging exercise.

Children with illness or disabilities are more restricted in exercise participation, and have higher levels of obesity than their peers. Finding structures that support them to participate brings psychological and social, as well as physical, advantages. Professionals such as physical therapists are well placed to ensure that activities are appropriate.

This information was produced with the kind assistance of the International Organisation of Physical Therapists in Paediatrics.
About physical activity and cardiovascular disease

Cardiovascular disease is the term used to describe diseases affecting the heart and circulatory system, and includes heart disease, stroke and raised blood pressure (hypertension).

Exercise, particularly aerobic conditioning and strength training, is one of the key interventions that can prevent death and disability from cardiovascular disease. Physical therapists are experts in prescribing these as part of a structured, safe and effective programme.

For those already affected by cardiovascular disease, the expert advice provided by physical therapists can help bring a return to usual roles. Physical therapists help people achieve a return to work, education, community participation and fulfilled lives.

Cardiovascular general

Cardiovascular disease is now the leading cause of deaths worldwide. Globally, 17.3 million people died from cardiovascular disease in 2008, 30% of all deaths. 7.3 million were due to coronary heart disease and 6.2 million due to stroke. It is estimated that by 2030, almost 23.6 million people will die from cardiovascular diseases, mainly heart disease and stroke.


The death and disability rates caused by heart disease and stroke for every country are available at: http://whqlibdoc.who.int/publications/2011/9789241564373_eng.pdf

It has been estimated that if everyone walked briskly at 4.8-6.4 kph (3-4 mph) on most days of the week, about 30% of deaths from cardiovascular disease would be prevented each year.


Manson JE et al. A prospective study of walking as compared with vigorous exercise in the prevention of coronary heart disease in women. NEJM. 1999;341(9):650-658. content.nejm.org/cgi/content/abstract/341/9/650

Research involving people at risk of cardiovascular disease has indicated that exercise supervised by physical therapists, along with counselling from a dietician, brings significant improvements in blood pressure, weight, quality of life and other health indicators after one year.


Raised blood pressure

Raised blood pressure, which is a risk factor for heart attack and stroke, can be controlled by exercise. One study has indicated that endurance exercise brings an average reduction of 10mm Hg for both systolic and diastolic blood pressure readings.


The type of strength training prescribed by physical therapists can effectively reduce blood pressure in older men and women.


Major analyses of available research have indicated that exercise can reduce resting blood pressure by 3mm Hg for resting systolic blood pressure.

This type of blood pressure reduction has been associated with a 5-9% reduction in heart morbidity, and a 8% to 14% reduction in the risk of stroke.


Stroke

Exercise reduces the risk of stroke. Walking at 4.8 kph (3 mph) for 5 hrs/wk brings a 46% lower risk of stroke, compared with non-exercisers.


Structured exercise also brings improvement in all measures of impairment and disability in people who have had a stroke.


In one study, patients who had a stroke performed strengthening and functional tasks three times a week for four weeks, and gained significant improvements in strength, walking speed, standing/sitting and endurance.


Heart disease

Systematic reviews of evidence have shown that therapeutic exercise provided by physical therapists is beneficial to people with coronary heart disease, heart failure and chronic obstructive pulmonary disease.


Reviews of evidence have shown that exercise-based cardiac rehabilitation for patients with coronary heart disease significantly improves health outcomes and mortality rates.


A review of evidence has indicated that exercise training in people who have had heart failure is safe and effective.


Telehealth interventions can help reduce cardiovascular disease risk and help increase uptake of a prevention programmes by those who do not access cardiac rehabilitation.


This information was produced with the kind assistance of Julie Redfern.
About physical activity and diabetes

Diabetes mellitus is a condition where the amount of glucose in the blood is too high, causing tissue damage. There are two types. Type 1 diabetes occurs when the body is unable to produce any insulin. It cannot be prevented. Type 2 diabetes develops when the body isn't producing enough insulin, or becomes resistant to insulin. This type of diabetes can be prevented. Most cases of type 2 diabetes are associated with being overweight.

Exercise is one of the best ways to control or reduce weight, and reduce risk of type 2 diabetes. Physical therapists are experts in prescribing structured, safe and effective exercise programmes.

Their advice can also help people who have health complications as a result of diabetes. For example, they can help those who have lost limbs through diabetes-related amputations recover their mobility and adapt their environment so that they have independence. Physical therapists help people achieve a return to work, education, community participation and fulfilled lives.

Diabetes facts

The World Health Organization (WHO) estimates that 346 million people worldwide have diabetes. This number is expected to double by 2030.


Diabetes was traditionally more common in developed countries, but modernisation and lifestyle changes have meant it is increasingly prevalent in developing countries. According to WHO, almost 80% of diabetes deaths occur in low and middle-income countries.


Diabetes and its complications have a significant economic impact on individuals, families, health systems and countries. For example, WHO estimates that in the period 2006-2015, China will lose $558 billion in national income due to heart disease, stroke and diabetes alone.


The death and disability rates caused by diabetes for every country are available at: www.who.int/entity/cardiovascular_diseases/en/cvd_atlas_29_world_data_table.pdf

Exercise and diabetes

Exercise has a role in preventing and controlling diabetes. According to the World Health Organization, 30 minutes of moderate intensity physical activity on most days, along with a healthy diet, can help reduce the risk of developing type 2 diabetes.


Both resistance exercise and aerobic exercise are effective at reducing glucose intolerance and reducing the risk of diabetes.


High-intensity progressive resistance training, in combination with moderate weight loss, is effective in controlling blood glucose levels in older patients with type 2 diabetes.


Prevalence of diabetes by WHO Region

<table>
<thead>
<tr>
<th>Region</th>
<th>2000</th>
<th>2030 (predicted)</th>
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</thead>
<tbody>
<tr>
<td>Africa</td>
<td>7,020,000</td>
<td>18,234,000</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>15,188,000</td>
<td>42,600,000</td>
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<td>33,332,000</td>
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</tr>
<tr>
<td>South-East Asia</td>
<td>46,903,000</td>
<td>119,541,000</td>
</tr>
</tbody>
</table>
Physical therapists are exercise experts, providing services to optimise physical ability in a wide range of people. They prescribe exercise as part of a structured, safe, and effective programme.

An important part of their role is to help people remain active as they age. More than any other profession, physical therapists prevent and treat chronic disease and disability in aging adults through prescribed activity and movement.

The World Health Organization encourages regular physical activity for older adults, because it has been shown to improve their independence and quality of life (www.who.int/dietphysicalactivity/factsheet_olderadults/en/). It says that older adults should engage in at least 30 minutes of moderate-intensity physical activity five days a week, if appropriate (www.who.int/ageing/active_ageing/en/index.html).

Here is some information demonstrating the contribution of physical therapists in keeping people active as they age – particularly their role in maintaining general health, preventing and treating cardiovascular disease, and countering joint problems.

Improving functional ability

Older adults engaged in regular physical activity demonstrate improved balance, strength, coordination, motor control, flexibility and endurance. As a result, physical activity can reduce the risk of falls – a major cause of disability among older people.


Participation in regular exercise programmes leads to older adults having higher levels of function, greater independence, and improved quality of life.


Exercise programmes can slow down functional decline. Elderly adults can, with an appropriate exercise programme, be helped to achieve levels of activity that will bring health benefits, and slow the decline in function that might normally be expected with age.


Even for those in their 80s and 90s, exercise programmes can increase functional ability, postpone disability and maintain independent living.


Physical activity and exercise are inversely associated with mortality and age-related morbidity.


Promoting cardiovascular health

Regular exercise in older adults has many positive effects on cardiovascular health, including increasing cardiac output, maximum heart rate, endurance, and arterial blood flow, and decreasing heart rate, blood pressure, and risk of heart disease.

One study found that after eight months of regular training, a group of 85-year-olds had increased walking speed and increased maximal oxygen uptake and decreased blood pressure. This resulted in reduced health risk and improved independence.

Walking 10,000 steps is effective in lowering blood pressure and increasing exercise capacity in individuals with hypertension.

Improving joint health

Tai Chi exercise brings improved balanced and physical functioning to people with osteoarthritis.

Research indicates that exercise decreases pain, increases function, increases balance, and increases ability to exercise in people with osteoarthritis and rheumatoid arthritis.

Exercise decreases depression and anxiety in people with osteoarthritis.

Land-based therapeutic exercise programmes have been shown to reduce pain and improve physical function in people with osteoarthritis of the knee.

For people with osteoarthritis of the knee, both high intensity and low intensity aerobic exercise (stationary cycling) are equally effective at improving functional status, gait, pain, and aerobic capacity.

Research indicates that regular exercise by people with arthritis decreases the likelihood of developing disability by 10% and protects against functional decline.

Research provides strong evidence that for individuals with rheumatoid arthritis exercise from low to high intensity is effective in improving disease-related characteristics, reducing cardiovascular disease, and increasing functional ability
Improving mental health

Cardiovascular fitness is associated with increases in brain volume, in both gray and white matter and thus sparing of brain tissue in aging humans.

Physical activity has been shown to improve mental health and cognitive function in older adults and contributes to the management of disorders, such as depression and anxiety. Active lifestyles often provide older persons with regular occasions to make new friendships, maintain social networks, and interact with other people of all ages.

Research has indicated that increased levels of physical activity reduces the risk of Alzheimer’s disease. Exercise, along with cognitively stimulating activities, can reduce some of the symptoms of the disease.

Aerobic exercises significantly reduced depressive symptoms in people over 60.

A regular programme of aerobic exercise can slow or reverse functional deterioration, reducing the individual's biological age by 10 or more years, and potentially prolonging independence.

This information was produced with the kind assistance of Marilyn Moffat, Professor of Physical Therapy at New York University and President of WCPT.
Cancer is an umbrella term used to describe more than 100 different diseases with the common characteristic of uncontrolled malignant cell growth. It is a leading and growing cause of death worldwide, with the total number of cases globally increasing, as the world population grows and ages.

The growing global population with cancer faces unique challenges – from their disease and from the treatments they receive. Physical therapists can help them achieve health and quality of life. The prescribed exercises and lifestyle advice that physical therapists provide can also help people reduce their risk of getting cancer.

Cancer facts

Cancer is a leading cause of death worldwide and accounted for 7.6 million deaths (around 13% of all deaths) in 2008.

Deaths from cancer worldwide are projected to continue to rise to over 11 million in 2030. More than 30% of cancer can be prevented by modifying or avoiding key risk factors, including:

- being overweight or obese
- physical inactivity.

Other risk factors include:

- tobacco use
- low fruit and vegetable intake
- alcohol use
- HPV-infection
- urban air pollution
- indoor air pollution from household use of solid fuels.


The link between physical activity and cancer

Getting adequate physical activity, maintaining a healthy weight and eating a healthy diet can reduce the chance of recurrence of many cancers and increase the likelihood of disease-free survival after a diagnosis, say new guidelines from the American Cancer Society.

Source: American Cancer Society

Large population studies have identified a strong association between lower levels of physical activity and higher cancer mortality. Walking or cycling an average of 30 minutes per day has been associated with a 34% lower rate of cancer death and a 33% improved cancer survival.


Increasing numbers of studies are indicating that physical activity can reduce the incidence of cancer. World Health Organization recommendations say that undertaking 150 minutes of moderate intensity aerobic physical activity a week can reduce the risk of breast and colon cancers. The same amount of exercise can also reduce the risk of diabetes and heart disease.

Source: Global Recommendations on Physical Activity for Health, released by the World Health Organization in 2011
www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html

According to the International Agency for Research on Cancer: “Physical activity is one risk factor for non-communicable diseases which is modifiable and therefore of great potential public health significance. Changing the level of physical activity raises challenges for the individual but also at societal level.”

Physical activity helps people with the effects of treatment for cancer

A systematic review of controlled trials of physical activity interventions in cancer survivors, during and after treatment, showed that physical activity had a significant effect. A large effect was shown on upper and lower body strength, and a moderate effects on fatigue and breast-cancer-specific concerns. Exercise was generally well-tolerated during and after treatment, with minimal adverse events. The study abstracted data from over 82 studies.


A panel of experts convened by the American College of Sports Medicine concluded that exercise training is safe during and after cancer treatments and results in improvements in physical functioning, quality of life and cancer-related fatigue in several cancer survivor groups.


Physical activity helps improve outcomes for people with cancer

Studies have indicated a relationship between higher physical activity levels and lower mortality in cancer survivors. A recent meta-analysis reported that, post-diagnosis, physical activity reduced breast cancer deaths by 34%, all causes mortality by 41% and disease recurrence by 24%.


Studies also indicate the volume of exercise necessary to bring benefits. The Nurses’ Health Study reported 50% fewer cancer recurrences in women who exercised more than three hours per week. Among people who have had colo-rectal cancer, a study found a 50% lower rate of recurrence and related death in those who exercised more than six hours per week.


Current lack of physical activity among people with cancer

Generally, cancer survivors display low levels of physical activity. A study has reported that in Canada less than 22% of cancer survivors are physically active.


This information was produced with the kind assistance of Julie Walsh-Broderick, HRB Research Fellow, Department of Physiotherapy, Trinity Centre for Health Science, St James’s Hospital, Dublin
Here are some useful references for articles that show the benefit of physical therapy in:

- **hypertension**
- **cardiovascular disease**
- **stroke**
- **diabetes**
- **obesity**
- **chronic obstructive pulmonary disease.**

**Hypertension**


**Cardiovascular disease**


Pollock M et al. Resistance Exercise in Individuals With and Without Cardiovascular Disease: An Advisory


Stroke


Diabetes


Obesity


Chronic Obstructive Pulmonary Disease

American College of Chest Physicians, American Association of Cardiovascular and Pulmonary Rehabilitation [American College of Chest Physicians (ACCP) and the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR)]. Pulmonary rehabilitation: joint ACCP/AACVPR evidence-based guidelines [with systematic review]. Chest 1997 Nov;112(5):1363-1396


http://publications.nice.org.uk/chronic-obstructive-pulmonary-disease-cg101


