

MINISTRY OF HEALTH

NATIONAL PHYSICAL ACTIVITY ACTION PLAN 2018-2023





NATIONAL PHYSICAL ACTIVITY ACTION PLAN 2018-2023 MINISTRY OF HEALTH- KENYA

TABLE OF CONTENT

LIST OF TABLES	iii
ACRONYMS/ABBREVIATIONS	iv
FOREWORD	V
EXECUTIVE SUMMARY	iv
ACKNOWLEDGEMENTS	viii
DEFINITION OF CONCEPTS AND TERMS	ix
CHAPTER ONE: INTRODUCTION	2
CHAPTER TWO: OBJECTIVES	16
CHAPTER THREE: IMPLEMENTATION FRAMEWORK	22
REFERENCES	31
LIST OF CONTRIBUTORS	





Table 1: Benefits of Physical Activity	
--	--





ACRONYMS/ABBREVIATIONS

Community Based Organisations
Civil Society Organisations
Faith Based Organisations
Federation of Kenya Employers
Girl Child Network
Kenya Red Cross Society
Ministry of Labour & Social Protection
Ministry of Education
Ministry of Health
Ministry of Sports and Heritage
Technical Working Group
United Nations Children's Fund
World Health Program
World Food Program



FOREWORD

Although Kenyans enjoy comparatively good health, the prevalence of chronic disease is increasing and our ageing population is placing evergrowing pressures on the finite resources of our health system. Improving the uptake of physical activity at a population level can play a vital role in relieving these pressures. Physical activity can be preventative as well as helping to improve the quality of life of those with a chronic disease. Physical inactivity, on the other hand, plays a direct role in the development and progression of chronic health conditions.

This Acton plan seeks to highlight physical activity as a priority area for the Ministry of Health and create greater recognition of the importance of physical activity in optimising health outcomes. It brings together current evidence and identifies key physical activity issues for the Kenyan population. The NPAAP, sets out our key strategic objectives which include; 1. Development and dissemination of national legislation, policies and guidelines that promote physical activity, 2.Creation of public awareness on the health benefits of physical activity, 3. Strengthen implementation of the physical activity component of the school health policy and 4. Support implementation of programmes that promote physical activity in community settings.

Many of the drivers which can make a positive contribution to improved physical activity outcomes, such as transport and urban planning policy, are however outside of the direct control of the MOH. The Framework therefore describes the key roles that other sectors can play in the improvement of physical activity outcomes and acknowledges our many shared goals across government portfolios and in the community sector. The Ministry of Health for its own part will continue to work towards, and advocate for, innovative ways to promote physical activity in our daily work and play, and in our schools, families and communities, so that the healthy choice to be physically active can be the easy choice.

Sicily K. Kariuki (Mrs.), EGH Cabinet Secretary Ministry of Health



EXECUTIVE SUMMARY

A sustainable and healthy future for Kenya requires action to encourage more residents to become more active more often. Physical activity is known to have various health benefits Noncommunicable diseases (NCDs) kill 38 million people each year. Almost three quarters of NCD deaths, 28 million, occur in low- and middle-income countries. The major NCDs include heart diseases, Cancers, Diabetes and Chronic Respiratory diseases. Cardiovascular diseases (heart diseases) account for most NCD deaths, or 17.5 million people annually, followed by cancers (8.2 million), respiratory diseases (4 million), and diabetes (1.5 million).These 4 groups of diseases account for 82% of all NCD deaths and increasingly threaten the physical health and economic security of many lower- and middle- income countries. These four conditions have four major common risk factors which are tobacco use and or exposure, the harmful use of alcohol, unhealthy diets and physical inactivity.

Kenya launched the National Strategy on prevention and control of NCDs 2015-2020. One of the strategies to be addressed in this strategic document is physical inactivity. The public health impact of insufficient physical activity and the potential gains from even small population-wide increases are substantial. In addition to a reduced risk of death, greater amounts of regular moderate-to-vigorous physical activity reduce the risk of many of the most common, debilitating and expensive diseases or conditions in Kenya. Heart disease, stroke, hypertension, type 2 diabetes, dementia, depression, postpartum depression, excessive weight gain, falls with injuries among the elderly, and breast, colon, endometrial, esophageal, kidney, stomach, and lung cancer are all less common among individuals who are or become more physically active. Further to this regular physical activity can reduce the risk of developing a new chronic condition, reduce the risk of progression of the condition they already have, and improve their quality of life and physical function.

Physical activity is therefore a key determinant of health where health is defined as "a complete state of physical, mental and social well-being and not merely the absence of disease or infirmity" by World Health Organization (WHO). On the other hand, WHO defines physical activity as any bodily movement produced by skeletal muscles that require energy expenditure including activities undertaken while working, playing, carrying out household chores, travelling, and engaging in recreational pursuit.



The NPAAP provides the framework for sustained and comprehensive actions to promote health-enhancing physical activity involving all related stakeholders, and reflects the commitment and aspirations of policy-makers to provide better health and quality of life to the population. It builds upon the achievements of different stakeholders who are already providing facilities and opportunities for the practice of regular physical activity. The challenge now is to pool and optimize available resources and generate additional support to address the changing and growing needs of the population.

The NPAAP marks a milestone in the attempts of the public health sector to re-orientate its health services to give more importance to prevention and health promotion. It is considered as a window of opportunity to reduce the burden of non-communicable diseases in the years to come, and involve the population in individual and collective efforts to build a culture of physical activity and a healthier nation.

Dr. Kioko Jackson K., OGW Director of Medical Services Ministry of health



ACKNOWLEDGEMENTS

The Ministry of Health wishes to acknowledge the collaboration and participation of all individuals, organisations and institutions who dedicated their time and effort towards the successful completion of this action plan.

We appreciate the great support from the offices of the Cabinet Secretary, Principal Secretary, Director of Medical Services and the Department of Preventive and Promotive Health Services at the Ministry of Health. The Health and Ageing Unit wishes to thank the entire Division of Non-Communicable Diseases for the Strategic support and dedication to have this document complete.

We are grateful to WHO AFRO and Kenya office for the financial and technical support towards the development of this document.

In a special way we thank the team that was led by Dr. Muthoni Gichu the head of the health and Ageing Unit who dedicatedly and effortlessly provided coordination and guidance through the duration it has taken to develop this document to completion.

The contribution of the following individuals is highly appreciated Dr. Temo Waqaniyalu and Stephen Whiting with their tirelessly dedicated effort to see Kenya be at the fore front of having this document developed.

The launch of this document provides the country with direction towards responding to the growing burden on NCDS. We are calling upon all partners, stakeholders and health care workers to adopt and support the implementation of this action plan to help achieve the vision of a physically active and healthy nation.

Dr. Kibachio Joseph Mwangi

Head: Division of Non-communicable Diseases

Ministry of Health



DEFINITION OF CONCEPTS AND TERMS

Physical activity is defined as any body movement produced by skeletal muscles that requires energy expenditure by the individual- including activities undertaken while working, playing, carrying out household chores, travelling and engaging in recreational pursuits.

Exercise is a subset of physical activity behavior that involves purposeful and repetitive movements with the aim of improving cardio-respiratory or muscular/physical fitness. It is carried out in a planned and structured manner.

Physical fitness is a physiologic attribute determining a person's ability to perform muscle-powered work. A fundamental manifestation of this attribute is the ability to move—for example, to walk, run, climb stairs, and lift heavy objects

Club-based physical activity

Physical activity for exercise, recreation or sport that was organized in full or in part by a sport or recreation club or association that required payment of membership, fees or registration. This is distinct from fitness, leisure or sports centers that required payment for participation. Excludes all aerobics / fitness participants.

Non-organized physical activity

Physical activity for exercise, recreation or sport that was non-organized in full or in part; that is, not fully organized by a club, association or other type of organization.

Organized physical activity

Physical activity for exercise, recreation or sport that was organized in full or in part by

- a fitness, leisure or indoor sports centre that required payment for participation,
- a sport or recreation club or association that required payment of membership, fees or registration,
- a workplace,
- a school, or
- any other type of organization.



Incidental Activity

Incidental activities are physical activities that are performed as a part of carrying out normal daily tasks. These can include cleaning, climbing the stairs instead of using a lift or escalator, walking the dog and walking or cycling instead of driving short distances (to school or the local shopping centre).

Non-exercise physical activity is a phrase that encompasses all physical activity that is not exercise. It has been used to mean various types and intensities of physical activity, mostly light intensity physical activity.

Sedentary behavior is any waking behavior characterized by energy expenditure 1.5 or fewer METs while sitting, reclining, or lying [1]. Most office work, driving a car, and sitting while watching television are examples of sedentary behaviors.

Absolute intensity. The rate of energy expenditure required to perform any given physical activity. It can be measured in metabolic equivalents, kilocalories, joules, or milliliters of oxygen consumption.

Absolute rates of energy expenditure are commonly divided into four categories:

- Sedentary activity. Activity requiring 1.0 to 1.5 METs, such as sitting and reading or watching television, or standing quietly.
- Light intensity. Activity requiring 1.6 to less than 3.0 METs, such as walking at a slow pace or cooking.
- **Moderate intensity**. Activity requiring 3.0 to less than 6.0 METs, such as walking briskly mopping or vacuuming, or raking a yard.
- Vigorous intensity. Activity requiring 6.0 or greater METs, such as walking very fast, running, mowing grass with a hand-push mower, or participating in an aerobics class.





CHAPTER ONE: INTRODUCTION

Physical inactivity is the 4th leading risk factor for global mortality after high blood pressure, tobacco use and high blood glucose. PA is an independent risk factor for NCD. It is estimated to be the main cause for approx. 21-25% of breast and colon cancers, 27% of diabetes and 30% of ischaemic heart disease burden. There are many health benefits that accrue to more physically active individuals when compared to less physically activity individuals as form various studies [2008 Physical Activity Guidelines Advisory Committee Scientific Report]. Moderate-to-vigorous physical activity is associated with a reduced risk of excessive weight gain for both the general population and for pregnant women reduces feelings of anxiety and depression, and improves sleep and quality of life. Among older adults, regularly performed physical activity reduces the risk of dementia, improves physical function (the ability to accomplish routine tasks) and reduces the risk of falling and the risk of injury if a fall does occur. Further to this, more physical activity reduces the risk of cancers of the bladder, breast, colon, endometrium, esophagus (adenocarcinoma), kidney, stomach, and lung. For people with colorectal cancer, women with breast cancer, and men with prostate cancer, greater amounts of physical activity are associated with reduced risk of mortality from the original type of cancer; for people with colorectal cancer or women with breast cancer, greater amounts of physical activity are associated with reduced risk of all-cause mortality. Physical activity-related benefits also have been demonstrated for the large number of individuals who already have one or more chronic conditions, such as osteoarthritis, hypertension, type 2 diabetes, dementia, multiple sclerosis, spinal cord injury, stroke, Parkinson's disease, schizophrenia, attention deficit hyperactivity disorder, and recent hip fracture. Individuals considered to be frail also benefit from regular physical activity [2018 Physical Activity Guidelines Advisory Committee Scientific Report]. Unhealthy diet and physical inactivity are among the leading causes of major non-communicable diseases worldwide, including cardiovascular diseases, type 2 Diabetes, and certain types of cancers. Sedentary lifestyle is a major underlying cause of death and disability.

Globally, it is estimated that physical inactivity is responsible for 6% of the burden of disease from CHD ,7% of type 2 diabetes ,10% of breast cancer and 10% of colon cancer Inactivity is responsible for 9% of premature mortality or >5.3 of the 57 million deaths that occurred worldwide in 2008. It is further stated that, If inactivity were not eliminated, but decreased instead by 10% or



25%, >533,000 and >1.3 million deaths, respectively, may be averted each year[Lee et.al 2012].

The World Health Assembly endorsed a Global Strategy on Diet, Physical Activity, and Health in May 2004 [Global Strategy on Diet, Physical Activity and Health 2004]. It addressed *faulty diet and physical inactivity* as the *two main risk factors* for non communicable diseases. This strategy was endorsed by Kenya. In addition, is the Global Action Plan for the prevention and control of NCDs 2015-2020.



1.1 Understanding physical activity.

The term "physical activity" should not be confused with "exercise", which is a subcategory of physical activity that is planned, structured, repetitive, and aims to improve or maintain one or more components of physical fitness. Both, moderate and vigorous intensity physical activity brings health benefits.

The intensity of different forms of physical activity varies between people. In order to be beneficial for cardio respiratory health, all activity should be performed in bouts of at least 10 minutes duration. Regular physical activity of moderate intensity such as walking, cycling, or doing sports has significant benefits for health. At all ages, the benefits of being physically active outweigh potential harm, for example through accidents. Some physical activity is better than doing none. By becoming more active throughout the day in relatively simple ways, people can quite easily achieve the recommended activity levels.



Recommended levels of physical activity for health 0-4 years old

Parents and caregivers should encourage infants, toddlers and preschoolers to participate in a variety of physical activities that support their healthy growth and development, are age-appropriate, enjoyable and safe and occur in the context of family, child care, school and community. Infants should be physically active daily as a part of supervised indoor and outdoor experiences.

This recommendation places a high value on the advantages and benefits of physical activity that accrue throughout life and the following are recommended:

- 1. Infants (aged less than 1 year) should be physically active several times daily particularly through interactive floor-based play. Activities could include tummy time, reaching and grasping, pushing and pulling, and crawling
- 2. Toddlers (aged 1-2 years) and preschoolers (aged 3-4 years) should accumulate at least 180 minutes of physical activity at any intensity spread throughout the day, including
- a) A variety of activities in different environments.
- b) Activities that develop movement skills.
- c) Progression toward at least 60 minutes of energetic play by 5 years of age.
- d) Children in the early years should be physically active daily as part of play, games, sports, transportation, recreation and physical education. For those who are physically inactive, increasing daily activity towards the recommended levels can provide some health benefits.

Following these physical activity guidelines may improve motor skills, body composition, and aspects of metabolic health and social development. These potential benefits far exceed the potential risks associated with physical activity.These guidelines may be appropriate for infants, toddlers and preschoolers with a disability or medical condition; however, their parents or caregiver should consult a health professional to understand the types and amounts of physical activity appropriate for them.

More daily physical activity provides greater benefits.



5-17 years old



For children and young people of this age group physical activity includes play, games, sports, transportation, recreation, physical education or planned exercise, in the context of family, school, and community activities.

In order to improve cardio respiratory and muscular fitness, bone health, cardiovascular and metabolic health biomarkers and reduced symptoms of anxiety and depression, the following are recommended:

- 1. Children and young people aged 5–17 years old should accumulate at least 60 minutes of moderate to vigorous-intensity physical activity daily.
- 2. Physical activity of amounts greater than 60 minutes daily will provide additional health benefits.
- 3. Most of 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.

18-64 years old



For adults of this age group, physical activity includes recreational or 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.

In order to improve cardio respiratory and muscular fitness, bone health and reduce the risk of NCDs and depression the following are recommended:

- 1. Adults aged 18–64 years should do at least 150 minutes of moderateintensity 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 vigorousintensity activity.
- 2. Aerobic activity should be performed in bouts of at least 10 minutes duration.
- 3. For additional health benefits, adults should increase their moderateintensity 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 vigorousintensity activity.
- 4. Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

65 years old and above

For adults of this age group, physical activity includes recreational or leisuretime physical activity, transportation (e.g. walking or cycling), occupational (if the person is still engaged in work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities. In order to improve cardiorespiratory and muscular fitness, bone and functional health, and reduce the risk of NCDs, depression and cognitive decline, the following are recommended:

- 1. Adults aged 65 years and above 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 aged 65 years and above 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. Adults of this age group with poor mobility should perform physical activity to enhance balance and prevent falls on 3 or more days per week.
- 5. Muscle-strengthening activities should be done involving major muscle groups, on 2 or more days a week.
- 6. When adults of this age group cannot do the recommended amounts of physical activity due to health conditions, they should be as physically active as their abilities and conditions allow.

Overall, across all the age groups, the benefits of implementing the above recommendations, and of being physically active, outweigh the harms. At the recommended level of 150 minutes per week of moderate intensity activity. musculoskeletal injury rates appear to be uncommon. In a population-based approach, in order to decrease the risks of musculoskeletal injuries, it would be appropriate to encourage a moderate start with gradual progress to higher levels of physical activity.



1.2 Benefits of physical activity



Extensive research and scientific evidence demonstrates the significant benefits of physical activity. The benefits of regular physical activity participation include physical and mental health benefits for individuals, along with social, cultural, environmental, and economic benefits for the community as a whole. The greatest health gains are obtained from moving those who are sedentary or participating in only light physical activity to becoming at least moderately active. Table 1 summarizes these benefits.





Table 1: Benefits of Physical Activity

BENEFITS OF P	PHYSICAL ACTI	VITY
	1	• Reduces the risk of all-cause mortality
		• Reduces the risk of developing and dving from
		coronary heart disease
		• Reduces the risk of stroke
		• Reduces the risk of high cholesterol and high blood
		pressure
		•Reduces the risks of cardiovascular/heart diseases
		• Lowers the risk of developing and managing type 2
	1990	diabetes
		• Reduces the risk of developing some cancers in
		particular (colon and breast cancers)
		• Assists in the development and maintenance of healthy
		body fat levels.
	Adults	•Promotes healthy bones, muscles and joints
		•Reduces the risk of osteoporosis and osteoarthritis
		•Promotes Improved immunity
		• Increased energy
		• Improvements in sleep quality
		• Reduces feelings of depression, stress and anxiety, and
		promotes psychological wellbeing
		•Develops skills through achieving personal physical
		activity goals, increases feelings of self-efficacy and
		personal empowerment
INDIVIDUALS		•Reduced risks of menstrual symptoms, constipation
		and back pain
		•Prevents erectile dysfunction.
		•Reductions in postnatal depression
		• Provides beneficial effects on weight and skeletal
		health
		• Improved fitness (i.e. strength, coordination,
		flexibility)
		• benefit psychological indicators including preventing
		depression, anxiety and stress also raising self esteem
		and self concept
	Children/Youth	• Has a positive correlation with health enhancing
		benaviors such as not smoking
		• Improved social, communication, team building and
		a Improved relationshing
		• Improved relationships
		• Improves ability to dear with pressures and sitess of
		• Improved ability to concentrate at school
		•Reduces the burden of disability
	Special	• Reductions in postnatal depression
	populations	•Improves the quality of life
	T.T.	•Reduces the complications of labour and delivery
	Older Adults	 Reduced risk of falls and improved mobility
	narsons	 Increased social contact and independent living
	persons	•Reduced risk of NCDs



		Reduction in health care costs
	Individual	Reduced risk of developing dementia
	marriauur	reduced fish of developing demonta
	Family	•Increased family income
	Community	 Increased economic benefits flow from participation in sport and recreation events and associated tourism
ECONOMIC		•Small investments in recreation, sports and arts/culture
	Nation	often yield large economic returns • Increased productivity, decreased absenteeism, decreased staff turnover and reduced workplace accidents •Increased economic benefits flow from participation in sport and recreation events and associated tourism • Improved workability and economic viability of local
		areas
Z	Social/Cultural	Healthy communities are created by developing or harnessing community resources that improve health status and quality of life. Such resources include cultural norms that support behavior and lifestyle choices, education and skill building, recreation and culture. • Increased social cohesion • Improved social networks, social capital, family and community connectedness
		Reduction in criminal activity
COMMUNITIES	Environmental	Greater appreciation of the natural environment when pursuing outdoor recreation pursuits, and as more people use physical activity based transport options (active transport), there is likely to be: • Less air and noise pollution from vehicle emissions • Improved traffic flows and reduced congestion • Reduced demand for major road infrastructure i.e. roads, car parks • Enhanced liveability in local neighborhoods' when traffic is reduced

1.3 Physical inactivity Situation in Kenya

Levels of physical inactivity are high in virtually all developed and developing countries. In developed countries more than half the adults are insufficiently active. Atleast 60% of the world's population fails to complete the recommended amount of physical activity required to induce health benefits. This is partly due to insufficient participation in physical activity during occupational and domestic activities. An incerase in the use of passive modes of transport has also been associated with declining physical activity



level (WHO, 2009). Data gathered on the health surveys from around the world is remarkably consistent. The proportion os adults who are sedentary or nearly so ranges from 60 to 85%.

Evidence shows that the prevalence of type 2 diabetes among young people is increasing. Moreover, 80% of Type 2 diabetes patients are obese at the time of diagnosis.

Around the world physical activity levels are decreasing among young people. The WHO estimates that less than one third of young people are sufficiently active to benefit their present and future health and well being.

According to the Global School Health Survey 2003 conducted among students aged 13 to 15 years in Kenya, only 11.1% were engaged in regular physical activity of at least 60 minutes per day and 40.9% had sedentary habits. Rates of Inadequate physical activity is estimated to be 10% in males and 14% in females (WHO 2014) with uneven distribution among rural and urban populations where levels of physical activity among rural populations is higher (Am J Hum Biol. Nov 2012). Children show signs of transition to a more sedentary lifestyle with only 12.6% of school children in a recent Nairobi study meeting the levels of adequate daily physical exercise (Muthuri et al,BMC Public Health. 2014).

However, in Kenya there is an absence of data regarding levels of knowledge, attitudes and perceptions about physical activity in the population in general and a lack of data on levels of physical activity in all the age groups. In Kenya, though there has been an increasing trend in physical inactivity level. Furthermore, obesity among children is an emerging public health problem. A significant proportion of health spending is due to costs related to lack of physical activity and obesity.

The Nairobi Call to Action developed at the 7th Global Conference on Health Promotion held in 2009 that which Kenya hosted, focuses on key strategies and commitments *urgently required* for closing the implementation gap in health and development through health promotion. It urges governments to mainstream health promotion as a core and most cost-effective strategy for improving health and quality of life and reducing health inequities and poverty.



This NPAAP is linked to other strategies and plans at the global and national level like;

- i. Global strategy on Diet, Physical Activity and Health (2004)
- ii. Global Action Plan for the prevention of NCDs 2013-2020
- iii. National Strategy for the prevention, control and management of NCDs 2015-2020
- iv. National cancer control strategy 2017-2022
- v. National healthy diets and physical activity guidelines 2017

The time has come for the development and implementation of a National Action Plan on Physical Activity (2018 - 2023) which is realistic, achievable and sustainable with clearly defined goals and objectives and where emphasis will be laid on preventive and health promotion activities and which will be capable of bringing rich dividends to the country both socially and economically.

Justification for a National Plan of Action

Two decades ago the prevalence of NCD in developed countries was very low. Today, NCDs are on the rise at a rate of 17% annually globally, however this rise is higher in the sub-Saharan Africa at a rate of 27% annually and yet they are still grappling with communicable diseases.

The undiminished rise in NCDs is a cause of great concern to the whole community. The National Action Plan on Physical Activity attempts to respond to the urgent need for a comprehensive strategy for the promotion of physical activity in the Kenyan population so as to ensure that the future generations enjoy a healthier and better quality of life.

Physical activity's role as a NCDs risk factor is well established and therefore a strong tool for prevention. It has tremendous health promoting and disease preventing benefits and define to a large extent people's health, growth and development. Kenya does not have an existing policy document on physical activity, therefore the need to develop one in response to the growing NCDs burden.. Adequate regular physical exercise is an important component in the prevention of non-communicable diseases and in the maintenance of overall health and well being. There is evidence that even modest regular physical activity and dietary changes can prevent more than half of the cases of type



2 Diabetes. This is of particular relevance to a country like Kenya where the prevalence of diabetes is projected to be increasing.

Physical activity improves the quality of life for all age groups and populations in many ways by creating and sustaining their wellbeing

Some of the barriers to physical activity in Kenya include urbanization with poor built environment planning, security, inadequate information, motorized transport and social cultural factors. The NAPPA marks another milestone in the attempts of the public health sector to re-orientate its health services to give more importance to prevention and health promotion. It is considered as a window of opportunity to reduce the burden of non-communicable diseases in the years to come, and involve the population on individual and collective efforts to build a culture of physical activity and a healthier nation.

Vision, Goals, Guiding principles and Objectives

Vision



"A physically active and healthy nation."

Mission

"To improve health and well being and reduce health inequalities in Kenya through a diverse and inclusive provision of physical activity opportunities to enable more people to be more active, more often"

Goals

The main goals of the action plan are:

1. To increase and maintain adequate levels of health enhancing physical activity for all persons.



2. To contribute to the prevention, management and control of chronic non-communicable diseases.

GUIDING PRINCIPLES

Implementing evidence-based policy and practice: Research, analysis and evaluation informs the development of evidence based policy and programs. Physical activity initiatives should integrate the best available evidence with professional, community and peer based expertise.

Developing whole-of-population approaches: A whole-of-population approach aims to achieve maximum health gains by working with whole populations or sub-groups of the population. Population approaches are complemented by programs and services targeting individuals.

Developing whole-of-system approaches: The plan recognizes the value of adopting a systems approach to effect changes to whole system that influence the uptake of physical activity in the Kenya, rather than targeting individual elements of systems in isolation.

Implementing sustainable approaches: The Ministry of Health is committed to ensuring that health spending is as efficient and effective as possible. Promoting physical activity as part of a healthier lifestyle can help prevent a range of health problems, and contribute to reduced health costs over the longer term. Initiatives should be sustainable over time and responsive to changing community needs.

Valuing prevention and health promotion: The Ministry of Health recognizes the value of preventive approaches to health. This includes strengthening the skills and capacity of individuals and the population as a whole to engage in healthy active lifestyles. Effective health promotion influences the social determinants of health which are the social, environmental and economic conditions that impact on public and individual health.

Empowering consumers: The Ottawa Charter for Health Promotion and the Jakarta Declaration emphasize on the importance of enabling people to increase control over, and to improve their health. The Framework recognizes the importance of empowering people to participate directly in decisions about their health and wellbeing.



Addressing health inequalities: The Ministry of Health recognizes that some population groups experience inequities in health and access to health services. The Ministry of Health is committed to addressing structural and systemic issues which reinforce the divide in health outcomes between different population groups. Priority will be given to actions that aim to redress health inequalities and meet the needs of disadvantaged and vulnerable population groups.

Teamwork and Partnerships: Development of facilities, services and programs will, wherever possible, be in partnership with other stakeholders to maximize usage, ownership and connectedness.

Leadership and governance: The Ministry of Health Plan will provide the framework necessary for the Nation to be a leader in the areas of physical activity. Strategies to acknowledge this leadership role will be integrated within the Plan.

Integrity: The Plan will be realistic to its vision to ensure outcomes can be met with integrity. Information on opportunities for, and personal benefits of, physical activity will be clear, current and readily available to the community.

Innovation and Excellence: The Physical Activity Plan will incorporate trend watching and innovation. It will be an underlying philosophy to understand and manage the trends that will enable meeting the vision, and defining the ideas that will become the products or services to increase physical activity within the country.

People focus: Investment will be skewed towards developing and maintaining a community wide plan, which provides specific strategies to reach the at risk groups. Resources will be invested to encourage people to be active participants rather than passive spectators. All services, programs and infrastructure will recognize inclusion and diversification of all people regardless of their age, gender, religion, ethnicity or physical capability.





CHAPTER TWO: OBJECTIVES





TARGET

By 2023 to have reduced the levels of insufficient physical activity by 5%

OBJECTIVES

- 1. Development and dissemination of national legislation, policies and guidelines that promote physical activity
- 2. Create public awareness on the health benefits of physical activity
- 3. Strengthen implementation of the physical activity component of the school health policy
- 4. Support and initiate implementation of programmes that promote physical activity in community settings such as private and public institutions, workplaces, health facilities, villages and cities.

OBJECTIVE 1: Development and dissemination of national legislation, policies and guidelines that promote physical activity

Presence and availability of national legislation and policies in all relevant sectors need to be updated updated or developed so that they include components that aim to increase population physical activity levels. This will also focus on the re-orientation of health system to assess and promote physical activity as part of normal NCD prevention practice.

To achieve this objective, the following activities shall be undertaken;

- i. Establish a multi-sectoral technical working group on physical activity that includes representation from all relevant ministries including Ministry of Planning; Ministry of Transport, Infrastructure and Roads; Ministry of Sports and Culture.
- ii. Review existing urban design, transport and sports sector policies and identify those that can be utilized to increase population physical activity and identify new policies and or legislation that need to be developed.
- iii. Develop briefing materials to increase awareness among policy makers and other stakeholders about the importance,



health benefits and cost benefits of increasing physical activity in each sector.

- iv. Sensitization of stakeholders on importance of multisectoral action on physical activity
- v. Facilitate revision of existing policies or develop new policies in relevant sectors that promote physical activity and reduce barriers to physical activity
- vi. Adoption and implementation of updated or new policies
- vii. Review implementation of updated or new policies
- viii. Develop and disseminate national physical activity guidelines
 - ix. Sensitize policy makers on socio economic impact of inadequate physical activity
 - x. Include physical activity counselling in training curriculum for all health workers
 - xi. Raise awareness about online training courses available for health workers to increase skills in physical activity counseling
- xii. Conduct capacity building activities for health care workers in physical activity promotion
- xiii. Collect, analyse and use data for decision making on physical activity at all level of the health system from 2018 to 2023

OBJECTIVE 2: Create public awareness on the health benefits of physical activity

By engagement in multi-component, comprehensive and targeted public awareness campaigns implemented on a regular basis, tools and resources will be mobilized to increase awareness of the role and benefits of physical activity, support the adoption and maintenance of physical activity routines, and institute a supportive physical and cultural environment for physical activity.

To achieve this objective, the following activities shall be undertaken;

- i. Conduct research on the current knowledge, attitudes and behaviours of physical activity practice
- ii. Define behavioural objectives of the campaign



- iii. Conduct a situational market analysis and audience research
- iv. Engage key stakeholders at all levels and across all societal sectors in developing a standardized "brand" for promoting physical activity.
- v. Conduct an annual physical activity week and link it to world physical activity week
- vi. Develop and disseminate a toolkit on integrated education and communication strategies to raise awareness about the health risks and benefits of physical activity including print, online and social media resources
- vii. Optimise and encourage use of social media and other emerging technologies to promote physical activity
- viii. Train media professionals on the link between physical activity and obesity and NCDs
 - ix. Implement a yearly physical activity campaign and monitor results

OBJECTIVE 3: Strengthen implementation of the physical activity component of the school health policy

Schools have a central role in developing skills and confidence as well as enhancing the engagement of young people in physical activity opportunities. In cognisant of this, focus on increasing the proportion of schools implementing physical activity component of the school health policy is crucial. This not to forget the importance of standardising and the physical activity component into the school physical education and health curriculum.

To achieve this objective, the following activities shall be undertaken;

- i. Support schools in adopting and implementing the school health policy
- ii. Provide professional development on the school health policy for school staff
- iii. Develop and disseminate best practice models of schools adopting school health policy
- iv. Provide school staff with professional development on provision of physical activity programs that are safe, developmentally, age and culturally appropriate, and



inclusive of all population subgroups

- v. Develop a high quality physical activity component to integrate into the school curriculum
- vi. Provide students with the opportunity to engage in various types of physical activity as determined in the curriculum
- vii. Ensure that physical education class sizes and teacher/ student ratios are comparable to those for other subject areas
- viii. Ensure that students are engaged in moderate-to-vigorous intensity physical activity for at least 80% of physical education class time.
 - ix. Employ student assessment procedures that are consistent with national and/or state standards.
 - x. Ensure that schools deliver quality physical activity education as part of a 'well rounded' education
 - xi. Evaluate initiatives and collect data as part of the Global School Health Survey on physical activity

OBJECTIVE 4: Support and initiate implementation of programmes that promote physical activity in community settings such as private and public institutions, workplaces, health facilities, villages and cities.

Multi-component physical activity programmes initiated in the community and workplaces

To achieve this objective, the following activities shall be undertaken;

- i. Include actions that promote physical activity in all local and community plans
- ii. Support participation programmes with a focus on disadvantaged communities
- Develop new, and enhance existing, community programs that provide and promote healthy physical activity opportunities
- iv. Recruit, train, and retain a diverse group of leaders and volunteers to promote, organize, lead, and advocate for initiatives that encourage physical activity in their communities



- v. Develop a framework support materials for those working in developing the built environment to promote the importance of physical activity
- vi. Develop and promote walking and cycling strategies in each Local Authority area
- vii. Explore and maximise opportunities to enhance physical activity in workplaces
- viii. Develop a programme of continuous professional development on the role of physical activity for those working in developing the built environment
 - ix. Initiate and implement workplace programs that promote physical activity
 - x. Monitor and evaluate workplace programs promoting physical activity







CHAPTER THREE: IMPLEMENTATION FRAMEWORK

LINE OF ACTION 1: Development and dissemination of national legislation, policies and guidelines that promote physical activity

Demike and indication activities		Dognoncible	2018	2019	2020	2021	2022
Results and	indicative activities	Responsible					
Result 1.1	Indicator						
National legislation and policies in all relevant sectors have been updated or developed so that they include components that aim to increase population physical activity levels.	 Briefing materials developed for stakeholders No of Technical Working Group Meetings on Physical Activity No of stakeholder sensitization meetings No of policies identified to be updated No of policies revised No of policies new policies developed No of new policies implemented No of trainings done No of stakeholders trained No of monitoring & evaluation reports The end term review report 	MOH, The National Treasury and Ministry of Planning, Ministry of Transport & Infrastructure development, Ministry of Sports and Heritage, MOE					

Outcomes: Implemented policies, legislation and guidelines that increase population physical activity levels.



1.1.1 Establish technical work activity that in from all releva Ministry of Pla Transport, Infr Ministry of Sp	a multi-sectoral ing group on physical cludes representation nt ministries including anning; Ministry of astructure and Roads; orts and Culture.	МОН			
1.1.2 Review of transport and s and identify th to increase pop activity and id and or legislati developed.	existing urban design, ports sector policies ose that can be utilized pulation physical entify new policies ion that need to be	MOH Technical Working Group on Physical Activity: The National Treasury and Ministry of Planning, Ministry of Transport & Infrastructure development, Ministry of Sports and Heritage, Ministry of Education			
1.1.3 Develop increase aware makers and oth the importance cost benefits o activity in each	briefing materials to mess among policy her stakeholders about b, health benefits and f increasing physical n sector.				
1.1.4 Sensitization of stakeholders on importance of multisectoral action on physical activity					Q.
1.1.5 Facilitate revision of existing policies or develop new policies in relevant sectors that promote physical activity and reduce barriers to physical activity					
1.1.6 Adoption	and implementation				
of updated or 1	new policies				
1.1.7 Review i	mplementation of				
updated or nev	v policies				
Result 1.2	Indicator				



Health system re- oriented to assess and promote physical activity as part of normal NCD prevention practice.	 No. of reviewed reports, No of research reports, Briefing materials developed No of sensitized policy makers, No of sensitization meeting Amount of resources allocated No of guidelines developed No of trainings done No of stakeholders trained No of operationalized spaces established and equip No of evidence based decision 	MOH, The National Treasury and Ministry of planning			
	made				
Activities					
1.2.1 Develop	and disseminate				
national physic	cal activity guidelines				
1.2.2 Sensitize	policy makers on				
socio economi physical activit	c impact of inadequate	4			
1 2 3 Include n	hysical activity				
counselling in	training curriculum for				
all health workers				200	
1.2.4 Raise aw	areness about online				20
training course	s available for health				
workers to increase skills in physical			151		
activity counselling					
1.2.5 Conduct capacity building					
activities for health care workers in					
1.2.6 Collect	nalyse and use data				
for decision m	aking on physical				
activity at all le	evel of the health				
system from 20	018 to 2023				

LINE OF ACTION 2: Create public awareness on the health benefits of physical



activity

Outcomes: Increased public awareness on the health benefits of physical activity

Desults and indicative activities		Desponsible	2018	2019	2020	2021	2022
Results and mul	calive activities	Responsible					
Result 2.1	Indicator						
Multi- component, comprehensive and targeted public awareness campaigns implemented on a regular basis.	 Research around issue of physical activity conducted Strategic behavioural objectives identified Situational market analysis completed No of IEC materials developed No of social media platforms on physical activity 	MOH, MOE County Governments, Private sector, Professional associations, MSDs Media, CSOs, CBOs, Community groups, Welfare groups, FBOs					
Activities	 Increased knowledge and awareness of benefits of physical activity 					2	ρ.
2.1.1 Conduct rese	arch around the						
current knowledge, attitudes and behaviours of physical activity practice		МОН					
2.1.2 Define behave of the campaign	vioural objectives	МОН					



	r		-	
2.1.3 Conduct a situational market analysis and audience research	MOH, The National Treasury			
2.1.4 Engage key stakeholders at all levels and across all societal sectors in developing a standardized "brand" for promoting physical activity.	MOH, Partners			
2.1.5 Conduct an annual physical activity week and link it to world physical activity week	MOH, Partners, MSH			
2.1.6 Develop and disseminate a toolkit on integrated education and communication strategies to raise awareness about the health risks and benefits of physical activity including print, online and social media resources	MOH, Partners			
2.1.7 Optimise and encourage use of social media and other emerging technologies to promote physical activity	MOH			
2.1.8 Train media professionals on the link between physical activity and obesity and NCDs	мон		E	
2.1.9 Implement a yearly physical activity campaign and monitor results	MOH, Partners			

LINE OF ACTION 3: Strengthen implementation of the physical activity component of the school health policy



Outcomes: Improved quality of physical education and increased school time allocated for physical activity

		Responsible	2018	2019	2020	2021	2022
Results and inc	licative activities	Kesponsible					
Result 3.1	Indicator						
	 No of school 						
	adopting school						
	health policy						
Increase the	• No of trained						
proportion	school personnel						
of schools	 No of schools 	MOH,MOE,					
implementing	aware of best	<mark>UNI</mark> CEF, PLAN					
physical activity	practices for	INTERNERTIONAL,					
component of	physical activity	GCN, WFP, KRCS					
the school health	• No of students						
policy	aware of physical	- <i>r</i> e			1		
	activity health						
	benefits	and the second sec					
3.1.1 Support scho	ols in adopting and	MOH, UNICEF, WFP					
implementing the s	school health policy						
3.1.2 Provide profe	essional	MOLL WED			=/		
development on th	e school health	MOH, WFP,					
policy for school s	discominate best						
s.1.5 Develop and	ashools adopting	<mark>MOH</mark> , MOE,					
school health polic	schools adopting	UNICEF					
3 1 4 Provide scho	ol staff with						
professional develo	opment on provision	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				0	0
of physical activity	programs that are						
safe developmentally and culturally		MOH, MOE					
appropriate, and inclusive of all							
population subgroups							
Result 3.2	Indicator	MOH, MOE, partners					





	•	Physical		
		activity		
		integrated		
		into school		
Standardise		curriculum		
and the	•	No of students		
physical activity		engaging in		
component		physical activity	MOE, KICD, MOH	
into the school	•	No of physical		
curriculum		activity sessions	s	1
		in schools		
\sim	•	No of schools		
		assessing		
		physical activity	y	
Activities		1.6		
3.2.1 Develop a hi	gh d	quality physical		
activity componen	it to	integrate into the	eMOE, MOH, KICD	
school curriculum				
3.2.2 Provide stud	ents	s with the		
opportunity to eng	age	in various types	MOE	
of physical activity	y as	determined in		
the curriculum				
3.2.3 Ensure that p	ohys	sical education		
class sizes and tea	chei	r/student ratios	MOE	
are comparable to	tho	se for other	MOE	
subject areas				
3.2.4 Ensure that s	stud	ents are engaged		
in moderate-to-vig	goro	us intensity	MOE	
physical activity for	or a	t least 80% of		
physical education	n cla	iss time.		20
3.2.5 Employ stud	ent	assessment		
procedures that are	e co	nsistent with	MOE	
national and/or sta	te s	tandards.		
3.2.6 Ensure that s	scho	ols deliver		
quality physical activity education as		ty education as	MOE	
part of a 'well rou	nde	d'education		
3.2.7 Evaluate init	iati	ves and collect	MOH, MOE, Treasury	
data as part of the	Glo	bal School	and Ministry of	
Health Survey on	phy	sical activity	Planning	



LINE OF ACTION 4: Support and initiate implementation of programmes that promote physical activity in community settings; private and public institutions, workplaces, health facilities, villages and cities.

Outcomes: Increased promotion of physical activity in community settings.

Results and indicative activities		Responsible	2018	2019	2020	2021	2022
Result 4.1	Indicator						
	 No of community units implementing physical activity programs 	010					
Multi-component physical activity programmes implemented in the community	 No of community programs implemented No of community units having designated safe places for physical activity No of trained leaders and volunteers in the community 	MOH DNCD, CHDU, Office of the president, Implementing partners, PLAN International, DSW, KRCS					
Activities							
4.1.1 Include actions that promote physical activity in all local and community plans		MOH, KRCS, County Governments					
4.1.2 Support participation programmes with a focus on disadvantaged communities		MOH, County Governments					
4.1.3 Develop new, and enhance existing, community programs that provide and promote healthy physical activity opportunities		MOH, County Governments					



	-	1			
4.1.4 Recruit, train, and retain a diverse group of leaders and volunteers to promote, organize, lead, and advocate for initiatives that encourage physical activity in their communities		МОН			
Result 4.2	Indicator				
Physical activity programmes implemented in workplaces	 No of workplace programmes developed No of workplaces implementing physical activity programmes 	MOH, DNCD, FKE,COTU, ML&SPDevelopment and implementing partners (County Goverments,			
Activities					
4.2.1 Develop a framework support materials for those working in developing the built environment to promote the importance of physical activity		MOH, Developmnt and implementing partners, FKE			
4.2.2 Develop and promote walking and cycling strategies in each Local Authority area		Ministry of Transport and Infrastructure, MOH, County Governments			
4.2.3 Explore and maximise opportunities to enhance physical activity in workplaces		MOH, County Governments			
4.2.3 Develop a programme of continuous professional development on the role of physical activity for those working in developing the built environment		мон,			Э.
4.2.4 Initiate and implement workplace programs that promote physical activity		MOH, ML&SP, Partners			
4.2.5 Monitor and evaluate workplace programs promoting physical activity		мон			



REFERENCES

- Tremblay MS, Aubert S, Barnes JD, et al. Sedentary Behavior Research Network (SBRN) – Terminology Consensus Project process and outcome. Int J Behav Nutr Phys Act. 2017;14:75. doi:10.1186/s12966-017-0525-8.
- Physical Activity Guidelines Advisory Committee. Physical Activity Guidelines Advisory Committee Report, 2008. Washington, DC: U.S. Department of Health and Human Services; 2008. https://health. gov/paguidelines/guidelines/report.aspx. Published 2008. Accessed September 22, 2016
- 2018 Physical Activity Guidelines Advisory Committee. 2018 Physical Activity Guidelines Advisory Committee Scientific Report. Washington, DC: U.S. Department of Health and Human Services, 2018. https:// health.gov/paguidelines/secondedition/report/pdf/PAG_Advisory_ Committee_Report.pdf. Accessed April 22, 2018
- 4. Global Strategy on Diet, Physical Activity and Health. A framework to monitor and evaluate implementation (WHO).http://www.who.int/ dietphysicalactivity/Indicators%20English.pdf
- 5. Lee, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., Katzmarzyk, P. T., & Lancet Physical Activity Series Working Group. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The lancet, 380*(9838), 219-229.
- Crespo, C. J., Palmieri, M.G., Perdomo, R.P., McGee, D.L., Smit, E., Sempos, C.T., Lee, I., &Sorlie, P.D. (2002). The relationship of physical activity and body weight with all-causemortality: Results from The Puerto Rico Heart Health Program. Annals of Epidemiology, 12,543-552
- Nocon, M., Hiemann, T., Muller_Riemenschneider, F., Thalau, F., Roll, S., et al. (2008). Association of physical activity with all cause and cardiovascular mortality: a systematic review and meta-analysis. European Journal of Cardiovascular Prevention and Rehabilitation, 15, 239_246
- 8. Kesaniemi ,Y., Danforth, E., Jensen, M., Kopelman, P., Lefebvre, P., & Reeder, B. (2001). Dose-response issues concerning physical activity and health: an evidence-based symposium.Medicine and Science in Sports and Exercise. 33(s6), s531-s538.
- 9. Blair, S., & Brodney, S. (1999). Effects of physical inactivity and obesity on morbidity and mortality: current evidence and research issues. Medicine and Science in Sports and Exercise, S646–S662.



- Blair, S.N., Kampert, J.B., Kohl, H.W., Barlow, C.E., Macera, C.A., Paffenbarger, R.S. et al. (1996). Influences of cardiorespiratory fitness and other precursors on cardiovascular disease and all-cause mortality in men and women. The Journal of the American Medical Association, 276(3), 205–210.
- 11. Anderson, L. (1995). Physical activity and physical fitness as protection against premature disease or death. Scandinavian Journal of Medicine and Science in Sport, 5(6), 318-328.
- 12. Bull, F.C., Bauman, A.E., Bellew, B., & Brown, W. (2004). Getting Australia Active II: An update of evidence on physical activity and health. Melbourne, Australia. National Public Health Partnership.
- Scrutinio, D., Temporelli, P.L., Passantino, A., & Giannuzzi, P. (2009). Long-term secondary prevention programs after cardiac rehabilitation for the reduction of future cardiovascular events: focus on regular physical activity. Future Cardiology, 5(3), 297-314.
- 14. Jolliffe, J.A., Rees, K., Taylor, R.S., Thompson, D., Oldridge, N., & Ebrahim, S. (2000). Exercise-based rehabilitation for coronary heart disease. Cochrane Database of Systematic Reviews, Issue 4, CD001800.
- 15. United States Department of Health and Human Services. (1996). Physical Activity and Health: a Report of the Surgeon General. Atlanta, Centres for Disease Control and prevention.
- 16. Wannamethee, S. G., & Shaper, A.G. (2001). "Physical activity in the prevention of cardiovascular disease." Sports Medicine, 31(2), 101-114.
- 17. Bauman, A., & Owen, N. (1999). Physical activity of adult Australians: epidemiological evidence and potential strategies for health gain. Journal of Science, Medicine and Sport, 2(1), 30–41.
- Ivy, J., Zderic, T., & Fogt, D. (1999). Prevention and treatment of noninsulin-dependent diabetes mellitus. In: Holloszy J (ed.) Exercise and Sport Sciences Reviews. Philadelphia: Lippincott Williams & Wilkins. 17, 1–36.
- 19. Holmes, MD. (2005). Physical activity and survival after breast cancer diagnosis. JAMA, 293(20), 2479-2486.
- 20. Healy, G., Dunstan, D., Shaw, J., Zimmet, P., & Owen N. (2006). Beneficial associations of physical activity with 2-h but not fasting blood glucose in Australian adults: the AusDiab study. Diabetes Care, 29(12), 2598-604.
- 21. Galvao, D., & Newton, RU. (2005). Review of exercise intervention studies in cancer patients. J Clin Oncol, 23(4), 899-909.
- 22. Knols, R. et al. (2005). Physical exercise in cancer patients during and after medical treatment: a systemic review of randomized and controlled clinical trials. J Clin Oncol, 23(16), 3830-3842.



- McNeely, ML, Campbell, KL, Rowe, BH, Klassen, TP, Mackey, JR, & Courneya, KS. (2006). Effects of exercise on breast cancer patients and survivors: a systematic review and meta-analysis. Can Med Assoc J, 175(1), 34-41.
- 24. Colditz, G., Cannuscio, C., & Frazier, A. (1997). Physical activity and reduced risk of colon cancer: implications for prevention. Cancer Causes and Control, 8, 649–667.
- 25. Verloop J, Rookus M, van der Kooy D & van Leeuwen F. (2000). Physical activity and breast cancer risk in women aged 20–54 years. Journal of the National Cancer Institute, 92(2), 128–135.
- 26. Huxley, R.R., Ansary-Moghaddam, A., Clifton, P., Czernichow, S., Parr CL, Woodward M. (2009). The impact of dietary and lifestyle risk factors on risk of colorectal cancer: a quantitative overview of the epidemiological evidence. International Journal of Cancer, 125(1), 171-180.
- 27. DiPietro, L. (1995). Physical activity, adiposity, and body weight: an epidemiologic perspective. Exerc Sport Sci Rev. 23, 275-303.
- Avenell ,A., Broom, J., Brown, T.J., Poobalan, A., Aucott, L., Stearns, S.C. et al. (2004). Systematic review of the long-term effects and economic consequences of treatments for obesity and implications for health improvement. Health Technology Assessment, 8(21), 1-182.
- 29. Shaw, K.A., Gennat, H.C., O'Rourke, P., & Del Mar, C. (2006). Exercise for overweight or obesity. Cochrane Database of Systematic Reviews, Issue 4, CD003817.
- 30. Cairns, A.P., & McVeigh, J.G. (2009). A systematic review of the effects of dynamic exercise in rheumatoid arthritis. Rheumatology International, ePub release.
- Bonaiuti, D., Shea, B., Lovine, R., Negrini, S., Robinson, V., Kemper, H.C., Wells, G., Tugwell, P., & Cranney, A. (2002). Exercise for preventing and treating osteoporosis in postmenopausal women. Cochrane Database of Systematic Reviews, Issue 3, CD000333.
- 32. Woods, J.A., Vieira, V.J., & Keylock, K.T. (2009). Exercise, inflammation, and innate immunity. Immunology and Allergy Clinics of North America. 29(2), 381-393.
- **33**. O'Connor, P.J., & Puetz, T.W. (2005). Chronic physical activity and feelings of energy and fatigue. Medicine and Science in Sports and Exercise, 37(2), 299-305.
- 34. Puetz, TW. (2006). Physical activity and feelings of energy and fatigue: epidemiological evidence. Sports Medicine, 36(9), 787-780.
- 35. Kubitz, K.A., Landers, D.M., Petruzzello, S.J., & Han, M. (1996). The effects of acute and chronic exercise on sleep: a meta-analytic review.



Sports Med. 21, 277-291.

- 36. O'Connor, P.J., & Youngstedt, S.D. (1995). Influence of exercise on human sleep. Exerc Sports Sci Rev. 23, 105-134.
- 37. Youngstedt, S.D., O'Connor, P.J., & Dishman, RK. (1997). The effects of acute exercise on sleep: a quantitative synthesis. Sleep. 20, 203-214.
- Dunn, A., Trivedi ,M., & O'Neal ,H. (2001). Physical activity doseresponse effects on outcomes of depression and anxiety. Medicine and Science in Sports and Exercise, 33, S587–S597.
- 39. Martinsen, E.W. (2008). Physical activity in the prevention and treatment of depression and anxiety. Nordic Journal of Psychiatry, 62(47), 25-29.
- 40. Street, G., James, R., & Cutt, H. (2007). The relationship between organised physical recreation and mental health. Health Promotion Journal of Australia, 18(3), 236-239.
- Deslandes, A., Moraes, H., Ferreira, C., Veiga, H., Silveira, H., Mouta, R., et al. (2009). Exercise and mental health: many reasons to move. Neuropsychobiology, 59(4), 191-198.
- 42. Hillman, C.H., Erickson, K.I., & Kramer, A.F. (2008). Be smart exercise your heart: exercise effects on brain and cognitions. Nature Reviews, 9(1), 58-65.
- 43. Merrick, J., & Kandel, I. (2003). Physical activity, children and adolescents. International Journal of Adolescent Health and Medicine. 15(4), 369-370.
- 44. Oude Luttikhuis, H., Baur, L., Jansen, H., Shrewsbury, V.A., O'Malley, C., Stolk, R.P., & Summerbell, CD. (2009). Interventions for treating obesity in children. Cochrane Database of Systematic Reviews, Issue 1.
- 45. Flynn, M.A., McNeil, D.A., Maloff, B., Mutasingwa, D., Wu, M., Ford, C., & Tough, SC. (2006). Reducing obesity and related chronic disease risk in children and youth: a synthesis of evidence with 'best practice' recommendations. Obesity Reviews, 7(1), s1-s5.
- 46. Jimenez-Pavon, D., Kelly, J., & Reilly, J.J. (2009). Associations between objectively measured habitual physical activity and adiposity in children and adolescents: Systematic review.International Journal of Paediatric Obesity, 26, 1-16.
- 47. Brooke-Wavell, K., & Stensel, D. (2008). Exercise and children's bone health. The Journal of Family Health Care, 18(6), 205-208.
- 48. Ondrak, K., & Morgan, D. (2007). Physical activity, calcium intake and bone health in children and adolescents. Sports Medicine, 37(7), 587-600.
- 49. Wolff, .J, van Croonenborg, J., Kemper, H., Kostense, P.J., & Twisk, J. (1999). The effect of exercise training programs on bone mass: a metaanalysis of published controlled trials in preand postmenopausal



women. Osteoporosis International, 9(1):1–12.

- 50. Hopkins, N.D., Stratton, G., Tinken, T.M., McWhannell, N., Ridgers, N.D., Graves, L.E., et al. (2009). Relationships between measures of fitness, physical activity, body composition and vascular function in children. Arthrosclerosis. 204(1), 244-249.
- 51. Haga, M. (2008). The relationship between physical fitness and motor competence in children. Child: Care, Health and Development, 34(3), 329-334.
- 52. Mutrie, N. & Parfi tt, G. (1998). Physical activity and its link with mental, social and moral health in young people. In Young and Active? Young People and Health-enhancing Physical Activity: Evidence and Implications (edited by S.J.H. Biddle, N. Cavill and J.F. Sallis), pp. 49–68. London: Health Education Authority.
- 53. Wold, B. & Hendry, L. (1998). Social and environmental factors associated with physical activity in young people. In Young and Active? Young People and Health-enhancing Physical Activity: Evidence and Implications (edited by S.J.H. Biddle, N. Cavill and J.F. Sallis), 119–132. London: Health Education Authority.
- 54. Mulvihill, C., Rivers, K. & Aggleton, P. (2000). Physical Activity 'At Our Time': Qualitative Research Among Young People Aged 5 to 15 Years and Parents. London: Health Education Authority
- 55. Biddle, S., Gorely, T., & Stensel, D. (2004). Health enhancing physical cavity and sedentary behavior in children and adolescents. Journal of Sports Science, 22, 679-701.
- 56. Savage, M., & Holcomb, D. (1998). Physical activity levels and self-reported risk-taking behavior among rural Australian and American 7th–9th grade adolescents. International Quarterly of Community Health Education. Vol 17(4), 1997-1998, pp. 345-360
- 57. Pate, R., Heath, G., Dowda, M., & Trost, S. (1996). Associations between physical activity and other health behaviors in a representative sample of US adolescents. American Journal of Public Health, 86(11), 1577-1581.
- 58. Taras, H. (2005). Physical Activity and Student Performance at School. Journal of SchoolHealth, 75(6), 214-218.
- 59. Brown, W., Mishra, G., Lee, C., & Bauman, A. (2000). Leisure time physical activity in Australian women: Relationship with well being and symptoms. Research Quarterly for Exercise and Sport, 71(3): 206-216.
- Brown, W., Burton, N., et al. (2007). Updating evidence on physical activity and health in women. American Journal of Preventive Medicine, 33(5): 404-411.
- 61. Brown, S., & Lumley, J. (1998). Maternal health after childbirth: results



of an Australian population based survey. British Journal of Obstetrics and Gynecology, 105, 156_161.

- Armstrong, K., & Edwards, H. (2003). The effects of exercise and social support on mothers reporting depressive symptoms: A pilot randomised controlled trial. International Journal of Mental Health Nursing, 12, 130_138.
- 63. Daley, A.J., MacArthur, C., & Winter, H. (2007). The role of exercise in treating postpartum depression: A review of the literature. Journal of Midwifery and Women's Health, 52, 56_62.
- 64. American College of Sports Medicine. (1998). American College of Sports Medicine Position Stand: Exercise and physical activity for older adults. Medicine and Science in Sports and Exercise, 30(6), 992-1008.
- 65. 60. Brill, P., Macera ,C., Davis, D., Blair, S., & Gordon, N. (2000). Muscular strength and physical function. Medicine and Science in Sports and Exercise, 412–416.
- 66. 61. Gillespie, L., Gillespie, W., Cumming, R., Lamb, S.E., & Rowe, BH. (1998). Interventions to reduce the incidence of falling in the elderly. Cochrane Database Systematic Reviews, Issue 3.
- 67. 62. Vogel, T., Brechat, P.H., Leprêtre, P.M., Kaltenbach, G., Berthel ,M., & Lonsdorfer, J. (2009).
- 68. Health benefits of physical activity in older patients: a review. International Journal of Clinical Practice, 63(2), 303-320.
- 69. Stewart, A., & King, A. (1991). Evaluating the efficacy of physical activity for influencing quality of life outcomes in older adults. Ann Behav Med, 13, 108–116.
- 70. McAuley, E., Blissmer, B., Marquez, D., Jerome, G., Kramer, A., & Katula, J. (2000). Social Relations, Physical Activity, and Well-Being in Older Adults. Preventive Medicine, 31, 608–617.
- Vogel, T., Brechat, P.H., Leprêtre, P.M., Kaltenbach, G., Berthel ,M., & Lonsdorfer, J. (2009). Health benefits of physical activity in older patients: a review. International Journal of Clinical Practice, 63(2), 303-320.
- 72. Flicker, L. (2009). Lifestyle interventions to reduce the risk of dementia. Maturitas, 63(4), 319-322.
- 73. Solfrizzi, V., Capurso, C., D'Introno, A. et al. (2008). Lifestyle related factors in predementia and dementia syndromes. Experts Reviews of Neurotherapeutics, 8(1), 133-158
- 74. McNeil, L., Kreuter, M., & Subramanian, S. (2006). Social environment and physical activity: a review of concepts and evidence. Social Science and Medicine, 63(4), 1011-1022.
- 75. Carron, A., Hausenblas, H., & Mack, D. (2007). Social influence and



exercise: a metaanalysis. In. Smith, Daniel; Bar-Eli, Michael. Essential readings in sport and exercise psychology. (pp. 372-377). Champaign, IL, US: Human Kinetics. xiii, 522 pp

- 76. McGinn, A., Evenson, K., Herring, A., Huston, S., & Rodriguez, D. (2008). The association of perceived and objectively measured crime with physical activity: a cross-sectional analysis. Journal of Physical Activity and Health, 591, 117-131.
- 77. Queensland Public Health Forum, September 2006: Be Active Queensland 2006-2010, A framework for health sector action for physical activity in Queensland. p3
- 78. Queensland Transport (2009). Action Plan for Walking 2008-2010. Queensland Transport.
- 79. Stephenson, J., Bauman, A., Armstrong, T., Smith, B., & Bellew, B. (2000). The Cost of Illness Attributable to Physical Inactivity in Australia: A preliminary study, Population Health Division Publications, Canberra.
- 80. Steinhardt, M., Greenhow, L., & Stewart, J. (1991). The relationship of physical activity and cardiovascular fitness to absenteeism and medical care claims among law enforcement officers. American Journal of Health Promotion, 5(6), 455-460.
- Aldana, SG. (2001). Financial impact of health promotion programs: a comprehensive review of the literature. American Journal of Health Promotion, 15(5), 296-320.
- Van den Heuvel, S., Boshuizen, H.C., Hildebrandt, V., Blatter, B., Ariëns, G., & Bongers, P.(2009). Effect of sporting activity on absenteeism in a working Population. Br J Sports Med, 39,e15.
- 83. Centre for Community Economic Development, University of Wisconsin-Extension. (2003) Economic Benefits of a Walkable Community
- 84. Canadian Parks and Recreation Association. (1997). Benefits of Parks and Recreation www.cpra.ca/EN/main.php?action=cms.initBenefitsCat. (accessed July 2015)
- 85. World Health Organisation (WHO), 1986, Ottawa Charter for Health Promotion.
- 86. World Health Organisation (WHO), 1997, Jakarta Declaration on Leading Health Promotion into the 21st Century.
- 87. Adopted from: UNDP, 'The Evaluation Policy of UNDP', Executive Board Document DP/2005/28, May 2006, available at: http://www. undp.org/eo/documents/Evaluation-Policy.pdf; and UNEG, 'Norms for Evaluation in the UN System'ii, 2005, available at: http://www. unevaluation.org/unegnorms.



LIST OF CONTRIBUTORS

Dr. Temo Waqanivalu	Francis Lamech		
Stephen Whiting	Dorcas Kiptui		
Dr. Joyce Nato	Scholarstica Owuondo		
John Kyui	Dr. Muthoni Gichu		
Douglas Kotut	Wilfred Githinji		
Jared Owuor	Peris Mbugua		
Richard Shisia	Dr.Joseph Kibachio		
Ann Kendagor	Joseph Mumo		
Dr. Gladwell Gathecha	Dr. Alfred Karagu		
Zacharia Muriuki	James Nduati		
Alex Kigondu			







MINISTRY OF HEALTH DIVISION OF NON-COMMNICABLE DISEASES

