

National Programme for Promotion of Physical Activity: the situation in Portugal

Cecília Shinn (<https://orcid.org/0000-0001-8554-9761>)¹

Rizério Salgado (<https://orcid.org/0000-0002-7857-5205>)²

David Rodrigues (<https://orcid.org/0000-0001-6785-1510>)³

Abstract *Primary health care, due to its proximity and easy access, knowledge of the family and their community, and through preventive measures and continuity of care, has an important and decisive role to play in counselling and promotion of physical activity throughout the various stages of life. Portugal has the lowest levels of physical activity in Europe and high levels of sedentary lifestyle, which led the Directorate General of Health to establish Physical Activity as a priority health programme, and develop the National Strategy for Promotion of Physical Activity. This article aims to describe initiatives that have been implemented that promote physical activity. More family physicians have become interested in promoting physical activity in their clinical practice. Specific training has become more widely available, computer based tools have been developed as clinical practice aids (for evaluation of levels of physical activity and counselling) and local initiatives involving health professionals have increased, as well as more investment in terms of investigation and monitoring of all of the above. At the same time change is happening among urban spaces and local policies that favour physical activity.*

Key words *Physical activity, Sedentary lifestyle, Prevention, Primary health care, Portugal*

¹ Unidade de Saúde Familiar da Baixa, Agrupamento de Centros de Saúde Lisboa Central, Administração Regional da Saúde Lisboa e Vale do Tejo (ARSLVT). R. Palma 43 A. 1100-390 Lisboa Portugal. cecilia.shinn@gmail.com

² Unidade de Saúde Familiar S. Julião, Agrupamento de Centros de Saúde Lisboa Ocidental e Oeiras, ARSLVT. Lisboa Portugal

³ Faculdade de Ciências Médicas, Universidade Nova de Lisboa. Lisboa Portugal.

Introduction

The organization and dynamics of current societies contribute to progressively more sedentary populations. Lack of physical activity is a serious public health problem worldwide¹, and a risk factor contributing to mortality due to noncommunicable diseases. However, this can be modified, and prescribing physical activity has documented therapeutic value in many chronic diseases².

Primary health care and health care workers can play a pivotal role in educating, prescribing and promoting physical activity. Physical activity levels in Portugal are amongst the lowest in Europe³, which led the Directorate General of Health (DGS) to allocate priority status to the physical activity programme in the Ministry of Health's national health plan. This article intends to describe the initiatives that have been implemented for physical activity promotion. The methodology used was non-systematic searches of bibliographic references in articles, previously known authors and official programmes published by the organizations involved.

Primary health care and physical activity

Physical activity is any bodily movement produced by skeletal muscle contraction that requires energy expenditure. This includes any sporadic or regular activity, such as walking or climbing stairs, as well as activity carried out during work or at home. When talking of more organized movement we have physical exercise (planned and repetitive bodily movements designed to improve physical conditioning) and sports (with rules and competitive strategies).

Health promotion areas identified 40 years ago in the Declaration of Alma-Ata⁴ that still need to be dealt with are: establishing coordinated and sustainable healthy public policies, creating environments that favour health, empowering individuals and communities, and organizing health systems and their connections to the community so that they work together towards this common good. The declaration of Astana⁵ updates and reinforces the concepts set out in the Declaration of Alma-Ata. It underlines the importance of political decisions, the need for coherence between those working in policies, strategies and national plans, and the empowerment of individuals and communities. All these items are directly related to the theme of this article.

The Portuguese national plan for promotion of physical activity (PNPAF) was created in

2016⁶ and is organized according to the national strategy for promotion of physical activity, health and wellbeing (ENPAV 2016-2025)⁷. The authors took into account documents that describe global and regional strategies and recommendations (World Health Organization, WHO-Europe, and European Union). The programme aims to increase general literacy about physical activity, belief in its value, increase participation in physical activity, empower health professionals, promote structural changes that promote physical activity, stimulate the creation of environments that facilitate physical activity, promote physical activity monitoring and recognize best practice.

The PNPAF led to the creation of a multi-sectorial commission for the promotion of physical activity⁸ in 2017, with the aim of "elaborating, putting into practice and monitoring a national physical activity plan".

In June 2018 WHO Director General Dr Tedros launched the new WHO global action plan on physical activity 2018-2030⁹ that states «more active people for a healthier world». The presence of the Portuguese Prime Minister at this launch underlines the political commitment in this area.

In 2013 the WHO published its global action plan for the prevention and control of noncommunicable diseases which contained 9 voluntary objectives, including a 25% reduction in premature mortality due to noncommunicable diseases and a 10% reduction in insufficient physical activity by 2025. A mid-term evaluation revealed that progress was slow and irregular among countries with different income levels. The latest 2010 estimates revealed that 23% of adults and 81% of adolescents did not meet global recommendations for physical activity.

The new WHO⁹ plan defines 4 strategic objectives to achieve (creating active societies, systems environments and people) as well as a 15% relative reduction in physical inactivity levels in adults and adolescents by 2030, using 2016 levels as a reference.

Physical Activity Barometer

Physical inactivity prevalence was estimated at 27.5% in a 2016 study that included 1.9 million people from 168 countries¹⁰. Physical inactivity was defined as not carrying out 150 minutes of moderate activity or 75 minutes high intensity activity per week, or any combination of the two. Higher levels were found amongst women in Latin America and the Caribbean, and

in southern Asia and high income western countries. Prevalence is twice as high in high-income countries compared to low-income countries, and has increased in high income countries. In Portugal prevalence was estimated at 46% (40% among men and 52% among women)¹¹.

According to the Eurobarometer³, which evaluated the 28 EU member states in December 2017, levels of regular physical activity have been reducing since 2009. In 2017 only 35% of the population 15 years old or older achieved sufficient levels of physical activity.

In Portugal the percentage of people who never walk at least 10 minutes increased from 17 to 47% between 2013 and 2017, and those that rarely or never do sports increased from 36 to 64%.

Between 2009 and 2017 the percentage of people practicing other activities (using a bike to travel, dancing, gardening, etc.) went down from 17% to 5%, and those doing regular exercise or sport went down from 9% to 5%. Moderate physical activity was also practiced by a lower percentage of the population (it went from 14 to 10%, whereas the European average is 23%) and vigorous physical activity even less (from 9 to 7%).

Additionally levels of sedentary lifestyle increased. In 2009 24% spent over 5h 30min a day sitting down, and that increased to 34% in 2017, probably also due to reduced levels of physical activity during travelling time (from 25% to 17%).

Increasing levels of physical inactivity and sedentary lifestyle mean a greater risk factor for noncommunicable diseases. Noncommunicable diseases caused 38 million deaths in 2012 (68% of all deaths) of which 40% were premature deaths before the age of 70¹².

Physical activity is estimated to cause 5% of coronary disease, 7% of type 2 diabetes, 9% breast cancer and 10% colon cancer¹³. Levels of excess weight and obesity have been increasing, and physical inactivity is a contributing factor to the energy imbalance between consumption and expenditure, which leads to weight gain.

Evidence

Scientific literature has been establishing the importance of physical activity in health promotion, chronic noncommunicable disease prevention and as an aid to treatment in some diseases. Evidence reveals that physical activity reduces mortality to a similar degree compared to pharmacological interventions in some chron-

ic diseases¹⁴. More specifically, physical activity and pharmacological treatment are as efficient in secondary prevention of coronary disease, rehabilitation after stroke, treatment of heart failure and diabetes prevention.

Few behavioural interventions in health are as beneficial in so many medical areas as physical activity. Some examples are reduction in overall and cardiovascular mortality in patients with coronary disease¹⁵; reduced number of hospitalizations and improved life quality in patients with heart failure¹⁶, increase in time and distance walked in intermittent claudication¹⁷, and reduced blood pressure in healthy adults¹⁸.

In respiratory diseases physical activity increases life quality, clinically reduces dyspnoea and fatigue and reduces the number of hospitalizations in patients with chronic obstructive pulmonary disease¹⁹. It also increases confidence in disease control and life quality in patients with asthma²⁰.

In patients with metabolic syndrome physical activity promotes reduced risk of developing diabetes and better control of cardiovascular risk factors²¹. In diabetics it increases metabolic control and reduces glycated haemoglobin to a similar degree as some pharmacological treatment²²⁻²⁴, and has been shown to have a potentially protective effect against cardiovascular events in children and youth with type 1 diabetes²⁵. It is associated with improvement in cardiovascular risk factors and weight loss in adults who are overweight or suffer from obesity²⁶.

Physical activity is associated with reduced pain and improved life quality in muscular-skeletal diseases such as knee osteoarthritis²⁷, long term improvement in lower back pain²⁸ and potentially has a protective effect against falls and fractures in the elderly²⁹.

Lower quality evidence studies are available on mental health issues but the data tends to point to benefits in symptoms of depression³⁰, anxiety amongst youth³¹ and schizophrenia³².

Lastly, good quality evidence is starting to appear in oncological disease, such as prevention (for example, the inverse relationship between physical activity and risk of bowel cancer)³³, symptom control (reduced fatigue)³⁴ and rehabilitation and quality of life in advanced lung cancer³⁵.

Even though most studies in this area are observational studies with some methodological issues (related mostly to the difficulty in defining the intervention³⁶), a body of accumulated evidence allows us to confidently state that physical

activity has benefits in mental health, metabolic disease control, cardiovascular and pulmonary diseases, muscular-skeletal disease and neoplasm management².

National strategy for promotion of physical activity, health and wellbeing 2016-2025

The national strategy for promotion of physical activity, health and wellbeing 2016-2025⁷ (ENPAF) was compiled with the collaboration of many specialists working in health, sports, education, professional and academic organizations and other contributions through public consultation.

Its main national objective is to “improve general public awareness of the importance of physical activity for health and the implementation of intersectional and multidisciplinary policies that aim to reduce sedentary behaviour and increase levels of physical activity” with a view to “achieving low levels of sedentary behaviour in the general public, who as they are physically active will benefit from more years of healthy life free from disease”

Preliminary results of the Portuguese Barometer³⁷ carried out in 2018 revealed that Portuguese agree that regular physical activity improves life quality and 90% state that they would like to be physically active, even though 94% did not know the official WHO recommendations on healthy levels of physical activity. While 74% recognize that there are policies that promote physical activity, only 41% stated that they had been counselled by their doctor regarding physical activity.

ENPAF defines the following as priority areas of intervention: physical activity promotion, health professionals, multi-sectorial collaboration, research and monitoring.

Physical activity promotion and primary health care

Health professionals occupy a privileged position in terms of access to knowledge, and their relationship with patients, and are therefore in a position to stimulate increased levels of physical activity. While this is particularly true in primary health care we should not forget exercise recommendations for specific health issues and hospital based recommendations.

Increasing number of medical degrees offer optional or obligatory modules in physical activity and health. Regional health administrations organize training in this area and offer these courses to family physician residents. With

regards to continuous medical education, the Academy for Training and Development of the Lisbon and Tagus Valley Regional Health Administration (ARSLVT) has organized training sessions on physical activity prescription for family physicians. The last course took place in November 2018 and was called “Promoting physical activity – from theory to practice”. In November 2018 the Family Health Unit Association included a session on “Promoting physical activity”³⁸ in their training academies, and encouraged the trainees to present projects in their health units.

Two evaluation and counselling tools for physical activity and sedentary lifestyle were developed as clinical aids (2017). Family physicians using the electronic health record system SClínico[®] can use a tool available in the Individual data sheet, and the program counts this record as a vital sign (Figure 1).

This tool contains three questions regarding two independent risk factors: the level of sedentary lifestyle and the (lack of) physical activity. There is a shortcut button which reminds the health professional to carry out the evaluation, which is visual reference that stimulates the tool’s use in any non-urgent care setting (Figure 2).

Levels of sedentary lifestyle and physical activity are stratified into three visual scores (red, yellow, green) according to the level of risk. Answers are registered over time which allows monitoring of individual progress on one hand, and on the other hand permits epidemiological surveillance of sedentary behaviour and levels of physical activity.

These three questions are already part of brief counselling but there is more information available in the electronic prescription module (PEM[®]). By clicking on a shortcut button doctors have access to five documents that they can print or email to patients, choosing the document according to their level of physical activity. The module contains a guide to help choose the most adequate document for each patient:

- Guide to physical activity
- Decision guide
- Action plan – how to begin
- Action plan – how to continue
- Maintenance

The content of these documents is also available in the Directorate General of Health’s manual “Brief counselling for promoting physical activity”³⁹. The objective is that each person finds their own solution best adapted to them, at home, at work and in their community (Figures 3 and 4).

PNPAF⁶ has also created several information charts with recommendations on physical activity for babies and children (0- 5 years old), children and adolescents (5 – 18 years old) adults and elderly (19 years and older) and during pregnancy.

In January 2019 a pilot project for physical activity promotion in the national health system was presented by the Directorate General of Health (DGS) and PNPAF⁴⁰ lasting for a year. It will take place in 13 health units countrywide with the creation of physical activity consultations in primary health care, aimed at patients with diabetes and depression.

The project aims to “evaluate population health benefits and the cost-effectiveness of this new model of physical activity promotion in the national health system”. It entails a multidisciplinary team, including doctors with training in sports medicine, physical activity specialists, and others such as nutritionists, physiotherapists, psychologists and nurses.

Health professionals – New projects in primary health care

Promotion of physical activity is appearing more and more on the health professional’s agenda. The appearance of many local initiatives is proof of this and reinforces the association between physical activity and health at any age.

Walk with a Doc⁴¹ in Portugal was inspired by the international Walk with a Doc[®] movement. Various health units countrywide carry out weekly or monthly walks with patients and family physicians (Ramalde, Prelada, Caldas de S. Jorge, S. João da Talha, Santa Cruz, Lisboa, Cascais). Some days they reach 60 participants, reinforcing the association between health and physical activity. Other health units organize activities such as Tai Chi (Odivelas).

+desPORTO⁴² is a digital platform created by family physician residents in western Porto in collaboration with local government, open to any user and offering a list of locally available resources in each part of the city that offer the opportunity to be physically active: gardens, gyms, clubs, pools etc.

Mobility Academies exist within health centres or other buildings, coordinated by physiotherapists, with a target population of those 65 years and older with a mild to moderate degree of dependence and with a referral from their family physician or primary health care nurse⁴³. The objective is to increase physical activity in

older people, reducing the risks associated with aging and increasing potential health, promoting independence and active aging.

Sweet Football is a research project resulting from collaboration between the Public Health Department of Porto University (ISPUP), the Portugal Football School of the Portuguese Football Federation and health units in Porto⁴⁴ with the objective of evaluating the health impact of a

The screenshot displays the SCLINICO® software interface for a patient named Roberto Balgado. The interface includes sections for patient identification, contact information, professional details, and a table for physical examination and activity records.

CONSULTAS		a partir de (ano)															
Data	Peso (kg)	IMC	P. Abd.	T.A.	T.A.D.	FC	Temp.	FR	FEV1	Vital	Alcool	Tabaco	Outros	Diabetes	EVAC	Medicacão	Outros
16-09-2014	59	20,9	110	58						10	10	0	0				
05-11-2012			116	56													

Figure 1. SCLINICO® - Records of physical examination and physical activity.

The screenshot displays the SCLINICO® software interface showing a questionnaire titled "Questionário de Atividade Física". The questionnaire includes questions about physical activity frequency, duration, and sedentary behavior.

1. Nesta semana normal, em quantos dias por semana faz caminhada rápida ou exercício físico de intensidade equivalente ou superior (i.e., atividades de caminhada, andar de bicicleta, praticar um desporto ativo, natação, etc.)?
2. Quanto tempo duram, em média, essas atividades, por dia, considerando apenas os períodos em movimento (trabalho ou lazer)?
3. Nem dia típico das suas rotinas quanto tempo no total costuma passar na posição sentado? (i.e., no carro ou outros transportes, numa secretária, no computador, a ver TV, a ler, no sofá ou cadeira e a comer, etc.)

Figure 2. SCLINICO® - Questionnaire on Physical Activity and Sedentary Lifestyle.

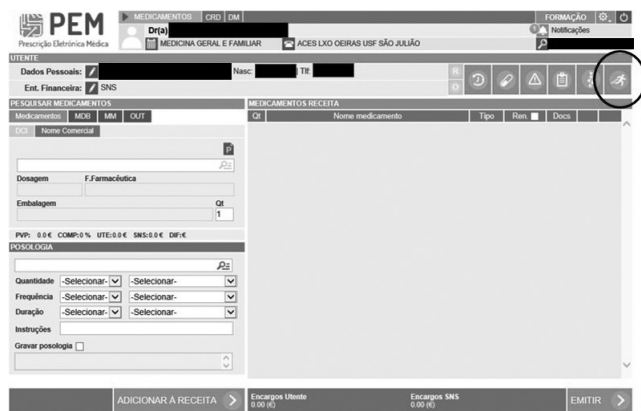


Figure 3. Electronic prescription module PEM and physical activity counselling button.

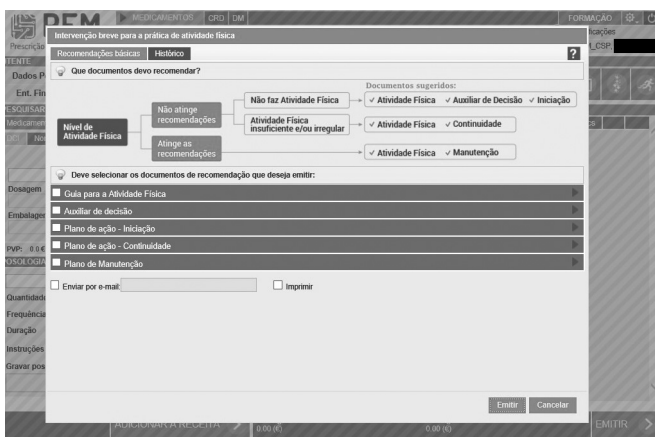


Figure 4. Choosing documents for patients in the electronic prescription module.

continue due to the benefits they felt, and the programme was continued.

Doctors that take care of themselves

On one hand doctors tend to have sedentary lifestyles, on the other hand we know that doctors who exercise also tend to recommend and prescribe it more to their patients.

Group activities – walking, team games, local races etc. – are also team building opportunities. A group of health professionals called “Wheels in the Air” working in health units in Loures and Odivelas (close to Lisbon) regularly organize football games, walks, races and bicycle tours.

Scientific events organized by family physicians often include running, walking or football games (National Family Physician Congress, National Health Unit congress and WONCA Europe 2014 held in Lisbon).

Some family physicians choose to consult their patients standing up, using a desk that has a higher support for the screen and keyboard, with the aim of reducing seated time and risks of sedentary behaviour.

Community projects – Multi-sectorial work

Even though there are lots of separate individual projects carried out by different groups, they tend to spread and increase the awareness of and participation in physical activity, promoting individual and professional initiatives, multiplying opportunities and contributing to a positive paradigm shift.

Lisbon +55⁴⁵ is organized and developed by the Lisbon municipality and a national charity association and promoted by the Directorate General of Health (DGS) and Regional Health Administration in collaboration with local government and clubs, associations and day centres, and takes place in 19 areas in Lisbon. It carries out projects in physical activity, nutrition, literacy and healthy lifestyle education.

Diabetes in Movement⁴⁶ is a community based programme for patients with type 2 diabetes that has been expanding. It started with the doctoral thesis of the current coordinator Public Health specialist Professor Romeu Mendes. This community intervention programme is coordinated by the DGS through the national programme for physical activity promotion and national diabetes programme, with the technical support of the Public Health department of Porto University (ISPUP) and the university of

physical activity program based on walking football for middle age and elderly patients with type 2 diabetes. The project ran till December 2018 in Porto and patients were recruited by their family physicians, who also followed their evolution clinically. When the research period came to an end the participants demanded the program

Trás-os-Montes and Alto Douro (UTAD). Twelve cities are currently carrying out the programmes activities – supervised physical activity sessions three times a week that each last 90 minutes, over a period of 9 months (October through June).

All over the country local governments have been investing in cycle paths within cities (promoting daily use of bicycles), biking areas outside cities (stimulating use of bicycles as a leisure activity), walking paths, public paths, open air gyms and swimming pools.

Local governments and universities in several cities have promoted the use of bicycles for daily commutes, through bike sharing systems

In June 2017 the DGS and Lisbon Municipality signed a protocol⁶ reinforcing the latter's role as a Promotion Partner for physical activity. Lisbon has been nominated European Sports Capital for 2021⁴⁷, with PNPAF's formal support.

In June 2018 the Central Regional Health Administration and DGS signed protocols with over 40 local governments to cooperate in promoting physical activity⁴⁸.

Research and monitoring

There is increasing interest by health professionals and others involved in promoting physical activity, which means one needs to know about and monitor projects and strategies. This aspect of research is necessary to evaluate, implement and replicate cost effective strategies.

The national strategy for promotion of physical activity, health and wellbeing includes research and monitoring objectives that aim, through collaboration with universities and others, to:

- Evaluate physical activity practice in Portugal and research levels of physical activity / inactivity levels;
- Identify possible barriers that make exercising difficult in the community;
- Determine reasons that may steer people towards being physically active;

- Verify the social and economic effects of physical activity, as well as the exact relationship between health and physical activity;

- Discover physical activity projects related to promotion of physical activity to compile information about best practice and evidence that supports them;

- Collect, analyse and evaluate existing projects, with an eye to reproducing or adapting them, highlighting projects that best promote changes in attitude and behaviour

Conclusion

Primary health care, due to its proximity, accessibility, knowledge of family and community, intervention in prevention and continuity of care, has a vital and decisive role to play in counselling and promotions of physical activity throughout life.

Portugal has one of the lowest levels of physical activity and highest levels of sedentary lifestyle in Europe, which is why the DGS has defined physical activity as a priority program, leading to the development of the national strategy for its promotion.

Family physicians have become more interested in incorporating it into their daily practice, and there is increasing availability of specific training, development of digital resources that help remote physical activity and local initiatives involving health professionals.

At the same time urban spaces have been developed positively to promote physical activity alongside government policies applied to physical activity in daily movement and leisure.

Only a cross-sectional effort of all involved can lead to paradigm shift that achieves the aim of increasing physical activity and reducing sedentary lifestyle, which are important risk factors for noncommunicable diseases, and therefore improve life quality and reduce the risk of premature death.

Collaborations

C Shinn, R Salgado and D Rodrigues were responsible for non-systematic research, writing and text review.

References

- Blair SN. Physical inactivity: the biggest public health problem of the 21st century. *Br J Sports Med* 2009; 43(1):1-2.
- Pedersen BK, Saltin B. Exercise as medicine – evidence for prescribing exercise as therapy in 26 different chronic diseases. *Scand J Med Sci Sports* 2015; 25(Supl. 3):1-72.
- Special Eurobarometer 472 - Sport and physical activity*. European Union: European Commission, Directorate-General for Education, Youth, Sport and Culture, December 2017. Disponível em: <http://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/survey/getsurveydetail/instruments/special/surveyky/2164>
- Declaration of Alma-Ata*. Alma-Ata, USSR: International Conference on Primary Health Care, September 1978. [acessado 2019 Fev 26]. Disponível em: <http://www.euro.who.int/en/publications/policy-documents/declaration-of-alma-ata,-1978>
- From Alma-Ata towards universal health coverage and the Sustainable Development Goals*. Astana, Kazakhstan: Global Conference on Primary Health Care, 2018. [acessado 2019 Fev 26]. Disponível em: <https://www.who.int/docs/default-source/primary-health/declaration/gcphc-declaration.pdf>
- Portugal. Direção-Geral da Saúde. *Programa Nacional para a Promoção da Atividade Física*. [Online]. [acessado 2019 Fev 26]. Disponível em: <https://www.dgs.pt/pns-e-programas/programas-de-saude-prioritarios/atividade-fisica.aspx>
- Lisboa. Direção-Geral da Saúde. *Estratégia Nacional para a Promoção da Atividade Física, da Saúde e do Bem-Estar*. Lisboa: Direção-Geral da Saúde; 2016.
- Portugal. Despacho n.º 3632 dos Gabinetes da Secretária de Estado da Ciência, Tecnologia e Ensino Superior, dos Secretários de Estado da Educação, da Juventude e do Desporto e do Emprego, da Secretária de Estado da Inclusão das Pessoas com Deficiência e do Secretário de Estado Adjunto e da Saúde. *Diário da República eletrónico*. [Online]. [acessado 2019 Fev 26]. Disponível em: <https://dre.pt/application/contento/106943778>
- World Health Organization (WHO). *Global action plan on physical activity 2018–2030: more active people for a healthier world*. Geneva: WHO; 2018.
- Guthold R, Stevens GA, Riley LM, Bull FC. Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1.9 million participants. *Lancet Glob Health* 2018; 6:e1077-e1086.
- World Health Organization (WHO). *Noncommunicable Diseases (NCD) Country Profiles*. Geneva: WHO; 2018.
- World Health Organization (WHO). *Global status report on noncommunicable diseases*. Geneva: WHO; 2014.
- Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT; PhD for the Lancet Physical Activity Series Working Group. Impact of Physical Inactivity on the World's Major Non-Communicable Diseases. *Lancet* 2012; 380(9838):219-229.
- Naci H, Ioannidis JPA. Comparative effectiveness of exercise and drug interventions on mortality outcomes: metaepidemiological study. *BMJ* 2013; 347:f5577.
- Heran BS, Chen JM, Ebrahim S, Moxham T, Oldridge N, Rees K, Thompson DR, Taylor RS. Exercise-based cardiac rehabilitation for coronary heart disease. *Cochrane Database Syst Rev* 2011; (7):CD001800.
- Davies EJ, Moxham T, Rees K, Singh S, Coats AJ, Ebrahim S, Lough F, Taylor RS. Exercise based rehabilitation for heart failure. *Cochrane Database Syst Rev* 2010; (4):CD003331.
- Lane R, Ellis B, Watson L, Leng GC. Exercise for intermittent claudication. *Cochrane Database Syst Rev* 2014; (7):CD000990.
- Cornelissen VA, Smart NA. Exercise training for blood pressure: a systematic review and meta-analysis. *J Am Heart Assoc* 2013; 2(1):e004473.
- McCarthy B, Casey D, Devane D, Murphy K, Murphy E, Lacasse Y. Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochrane Database Syst Rev* 2015; (2):CD003793.
- Carson KV, Chandratilleke MG, Picot J, Brinn MP, Esterman AJ, Smith BJ. Physical training for asthma. *Cochrane Database Syst Rev* 2013; (9):CD001116.
- Orozco LJ, Buchleitner AM, Gimenez-Perez G, Roqué I Figuls M, Richter B, Mauricio D. Exercise or exercise and diet for preventing type 2 diabetes mellitus. *Cochrane Database Syst Rev* 2008; (3):CD003054.
- Zanuso S, Jimenez A, Pugliese G, Corigliano G, Balducci S. Exercise for the management of type 2 diabetes: a review of the evidence. *Acta Diabetol* 2010; 47(1):15-22.
- Umpierre D, Ribeiro PAB, Kramer CK, Leitão CB, Zucatti ATN, Azevedo MJ, Gross JL, Ribeiro JP, Schaan BD. Physical activity advice only or structured exercise training and association with HbA1c levels in type 2 diabetes: a systematic review and meta-analysis. *JAMA* 2011; 305(17):1790-1799.
- Thomas DE, Elliott EJ, Naughton GA. Exercise for type 2 diabetes mellitus. *Cochrane Database Syst Rev* 2006; (3):CD002968.
- Quirk H, Blake H, Tennyson R, Randell TL, Glazebrook C. Physical activity interventions in children and young people with Type 1 diabetes mellitus: a systematic review with meta-analysis. *Diabet Med* 2014; 31(10):1163-1173.
- Shaw K, Gennat H, O'Rourke P, Del Mar C. Exercise for overweight or obesity. *Cochrane Database Syst Rev* 2006; (4):CD003817.
- Fransen M, McConnell S, Harmer AR, Van der Esch M, Simic M, Bennell KL. Exercise for osteoarthritis of the knee. *Cochrane Database Syst Rev* 2015; 1:CD004376.
- Oesch P, Kool J, Hagen KB, Bachmann S. Effectiveness of exercise on work disability in patients with non-acute non-specific low back pain: Systematic review and meta-analysis of randomised controlled trials. *J Rehabil Med* 2010; 42(3):193-120.
- Robertson MC, Campbell AJ, Gardner MM, Devlin N. Preventing injuries in older people by preventing falls: a meta-analysis of individual-level data. *J Am Geriatr Soc* 2002; 50(5):905-911.
- Cooney GM, Dwan K, Greig CA, Lawlor DA, Rimer J, Waugh FR, McMurdo M, Mead GE. Exercise for depression. *Cochrane Database Syst Rev* 2013; (9):CD004366.

31. Larun L, Nordheim LV, Ekeland E, Hagen KB, Heian F. Exercise in prevention and treatment of anxiety and depression among children and young people. *Cochrane Database Syst Rev* 2006; (3):CD004691.
32. Gorczynski P, Faulkner G. Exercise therapy for schizophrenia. *Cochrane Database Syst Rev* 2010; (5):CD004412.
33. Wolin KY, Yan Y, Colditz GA, Lee I-M. Physical activity and colon cancer prevention: a meta-analysis. *Br J Cancer* 2009; 100(4):611-616.
34. Tomlinson D, Diorio C, Beyene J, Sung L. Effect of exercise on cancer-related fatigue: a meta-analysis. *Am J Phys Med Rehabil* 2014; 93(8):675-686.
35. Peddle-McIntyre CJ, Singh F, Thomas R, Newton RU, Galvão DA, Cavalheri V. Exercise training for advanced lung cancer. *Cochrane Database Syst Rev* 2019; 28:1889.
36. Ioannidis JPA. Why most published research findings are false. *PLoS Med* 2005; 2(8):e124.
37. Lisboa. Direção-Geral da Saúde. *Programa Nacional para a Promoção da Atividade Física. Barómetro da Atividade Física*. Lisboa: Direção-Geral da Saúde; 2018.
38. Associação Nacional das Unidades de Saúde Familiar (USF-AN). *Promoção da atividade física: uma aposta para ganhar saúde*. [Online] [acessado 2019 Fev 26]. Disponível em: <https://www.usf-an.pt/academia-csp/tecnico-cientifica/promocao-da-atividade-fisica-uma-aposta-para-ganhar-saude/>
39. *Aconselhamento Breve Para A Promoção Da Atividade Física. Ferramentas de apoio*. Lisboa: Direção-Geral da Saúde; 2018. [acessado 2019 Fev 26]. Disponível em: <https://www.dgs.pt/programa-nacional-para-a-promocao-da-atividade-fisica/materiais-de-divulgacao/recursos.aspx>.
40. *Formação do Projeto-Piloto de Promoção da Atividade Física do SNS*. [Online]. [acessado 2019 Fev 26]. Disponível em: <https://www.dgs.pt/programa-nacional-para-a-promocao-da-atividade-fisica/eventos-e-iniciativas/eventos.aspx>
41. *Walk with a Doc*. [Online] [acessado 2019 Fev 26]. Disponível em: <https://walkwithadoc.org/our-locations/>
42. ACES Porto Ocidental. *Projeto +desporto*. [Online] [acessado 2019 Fev 26]. Disponível em: http://acesportoocidental.org/public/Text.php?text_id=316.
43. *Academia de Mobilidade ACES Lisboa Ocidental e Oeiras*. [Online] [acessado 2019 Fev 26]. Disponível em: https://www.sns.gov.pt/wp-content/uploads/2017/03/ACES_LX_OCID_OEIRAS_AcademiaMobilidade_ManualAcolhimento.pdf.
44. Notícias Universidade do Porto. *O futebol como medicamento para tratar a diabetes*. [Online] 13 Nov 2018. [acessado 2019 Fev 26] Disponível em: <https://noticias.up.pt/o-futebol-como-medicamento-para-tratar-a-diabetes/>.
45. Lisboa. Sítio da Câmara Municipal de Lisboa. *LISBOA +55*. [Online] [acessado 2019 Fev 26] <http://www.cm-lisboa.pt/viver/desporto/lisboa-55>.
46. *Diabetes em Movimento*. [Online] [acessado 2019 Fev 26] Disponível em: <https://diabetesemmovimento.wordpress.com/>.
47. Portugal. *Road to Capital Europeia do Desporto*. [Online] [acessado 2019 Fev 26] <http://roadto2021.pt/>
48. Portugal. Administração Regional de Saúde Centro IP. *ARS Centro e Municípios parceiros na promoção da atividade física*. [Online]. [acessado 2019 Fev 26] Disponível em: <http://www.arscentro.min-saude.pt/Noticias/Paginas/ARSCentroeMunic%C3%ADcpiosparceirosnapromo%C3%A7%C3%A3odaatividadef%C3%ADsica.aspx>

Article submitted 23/04/2019

Approved 16/09/2019

Final version submitted 18/09/2019