



**FRESENIUS
KABI**

caring for life



EXERCISE IN CHRONIC ILLNESS

Authors: Ronan Buckley

Senior Physiotherapist in Cystic Fibrosis

Coru Registration PT028705



This article was sponsored by Fresenius Kabi. Any views expressed are those of the author(s).
Apart from the subject matter Fresenius Kabi has had no editorial input.



Use of exercise as a formal means of health promotion dates back to ancient China, approximately 2500 BC [1]. Even in ancient Greece, Hippocrates – one of the fathers of modern medicine - advised patients to “avoid too much food and too little toil” to keep well. Now, at a time when society is being negatively impacted by the increasing prevalence of chronic disease, self-management tools such as exercise are gaining more and more traction in medicine. In the age of evidence based practice, however, scientific proof is needed to demonstrate that patients are directed toward effective treatments. In response to this, numerous clinical trials have been carried out using exercise as a therapeutic intervention in chronic diseases. And the results are almost exclusively positive.

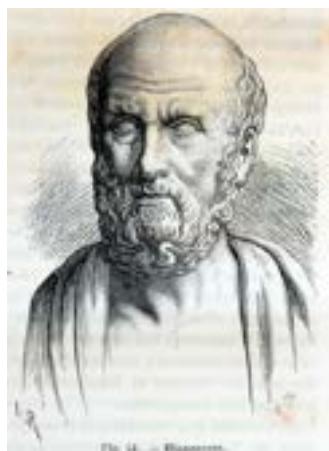
It is now well established that participation in regular physical activity has a preventative role in chronic illness. Exercise improves blood glucose control

Of all the treatments and strategies healthcare providers implement for the benefit of those in their care, very few (if any), improve all conditions. If a medication were available that was universally effective across all spectrums of health it would undoubtedly be hailed as a ‘wonder drug’.

Well, guess what – it exists! Even better – it’s free.

It's called exercise.

and can prevent or delay type 2 diabetes, along with positively affecting lipids, blood pressure, cardiovascular events and mortality [2]. In a comprehensive National Cancer Institute study involving more than 1.4 million participants, researchers found that people with the highest levels of physical activity had lower rates of cancer compared with those who had the lowest levels of physical activity. These cancers included esophageal, adenocarcinoma, liver, lung, kidney, endometrial, myeloid leukemia , myeloma, colon, head, rectal, bladder and breast[3]. Recent evidence also suggests weight training in particular is a more effective intervention than pharmacological methods to slow down sarcopenia in older adults. Furthermore, there is growing evidence supporting the theory that exercise may be able to prevent brain ageing and dementia[4]



Hippocrates – one of the fathers of modern medicine from Greece

Prevention of chronic illness is obviously a very powerful public health tool, but unfortunately, disease is often well established by the time an individual meets with a clinician. Exercise, however

is a powerful modality in treating chronic illness too. Some of the conditions exercise may help are obvious – for example, a physiotherapist regularly uses exercise to treat chronic low back pain or arthritic joints. Healthcare centers and hospitals commonly host cardiac and pulmonary exercise rehab classes. But some of the conditions exercise help are less obvious – for example it has theoretical benefits on the immune response, disease activity, quality of life, bone mineral density, and fatigue levels in patients with inflammatory bowel disease [5].

In cystic fibrosis, exercise is used to alleviate dyspnoea, aid sputum clearance, maintain pulmonary function and prevent reduction in bone mineral density amongst other factors [6]. In terms of those with mental health issues, both single bouts of exercise and exercise training programs have been shown to positively impact cognitive-emotional processes such as mood, rumination, attention and social interactions, and physiological states of tiredness and physical strengths[7].

In response to this growing evidence base for exercise as an effective treatment tool, the American College of Sports Medicine (ACSM) have launched a global



Image: Freepik

initiative – “Exercise is Medicine” – with the aim of increasing levels of physical activity in those with chronic illness[8]. Ultimately, this initiative is trying to encourage every health care professional, no matter the specialty, to address exercise levels with each patient they see. It is acknowledged that this is likely to be a very short intervention, as clinicians are often short of time, and specialized advice may be out of their scope of practice. However, it is suggested that meaningful change can be achieved in four simple steps. They are detailed in the Health Care Providers Guide [9] but can be summarized as below:



Discuss the patient's current level of physical activity



Advice regarding the importance of regular physical activity, specifically relevant to that patient's medical history and situation



Provide a written prescription to increase physical activity if required



Refer the patient to physical activity resources (programs, facilities, certified exercise professionals)

Earlier in this article, exercise was compared to a wonder drug – and, as with all drugs, it may have unintended side effects. Exercise is not safe or suitable for a small number of individuals. Before advising patients to commence a programme of exercise, a screening process to assess suitability should be undertaken. The Health Care Providers Guide [9] has its own screening pro forma, whilst similar documents are regularly used in an Irish health care setting [10]. These questionnaires help healthcare professionals without experience or qualifications in exercise prescription to decide which individuals are safe to start exercise programs and which individuals



Image: Freepik

require a medical review prior to doing so. If exercise is to be undertaken, it may be necessary to advise patients about how to prepare and exercise safely, depending on the chronic illness. For example, advise patients to ease into exercise, or “warm up” and also, have a “cool down” period rather than stopping abruptly. Exercising in a suitable supervised environment, with loose fitting clothing should be highlighted to those who may be at risk of falling. Adequate nutrition and hydration should

be insured before a bout of exercise for all, but especially in those with diabetes.

Whilst healthcare professionals without exercise prescription qualifications cannot be expected to prescribe detailed training programs, an understanding of the basic principles that underpin these programs may be of use in encouraging individuals to become more active. They are known as the FITT principles – Frequency, Intensity, Time and Type. Frequency relates to how often one exercises, intensity relates to how hard one exercises, time relates to how long one exercises during each session and type relates to what kind of exercise you do. Most recommendations for levels of physical activity are constructed around these guidelines. Taking these factors into account, you can provide a thorough exercise plan. For example, “3 times per week (F), I want you to get your heart rate to 70 % of its maximum (I), for 30 mins (T), by going for a fast walk (T)”. Progression of exercise routines, along the FITT principles, should be gradual – increasing by no more than 10% per week.

In general adults should aim to get at least 30 minutes a day of moderate activity on 5 days a week (or 150 minutes a week). Muscle strengthening work, such as weight lifting should be carried out twice per week. The National Guidelines on Physical Activity for Ireland [11] were published in 2014 and are a fantastic resource regarding recommended levels of physical activity. It gives examples of activities people may wish to undertake and guidance to healthcare professionals on where to find information, training and support to promote physical activity through their practice.

Hopefully by now, you are convinced



Image: Pixabay

that every adult individual with a chronic illness should be active. In fact, every individual should be active. But it's not that straight forward. Research has shown, that only 41% of Irish adults take part in moderate or strenuous physical activity for at least 20 minutes three or more times a week. As a population, we are miles away from meeting the recommended guidelines. Why? Well, it's not all down to a lack of awareness – 66% of Irish adults knew that they should be active for at least 5 days a week. When asked about how long someone should be active on those days, 81% correctly said at least 30 minutes a day [12]. And it's not down to a lack of desire to be more active, 92% of Irish Adults would like to make a change to improve their health and wellbeing – and being more active was the most common factor people would like to change (40%). It was even more of a priority than being financially more secure (31%) [12]. The reality is, that in today's busy society, it can be difficult to achieve all of the things we would like to in a day. Put simply, committing to an exercise programme can be hard. The health professional cannot change this

fact, but their messages should focus on stressing the benefits of physical activity, promoting self-belief, promoting social support and suggesting ways to fit physical activity into daily life[11]. It should be highlighted to patients that some physical activity is better than none, more is better than some, and any amount of physical activity you do gains some health benefits. The key to any successful exercise programme is that the person doing it enjoys the modality of exercise prescribed to them. For example, whilst the benefits of using swimming to exercise for those with arthritis are numerous, a swimming programme prescribed to someone who struggles to dress and undress in the changing rooms is doomed to failure. •

S U M M A R Y

Exercise is a powerful tool in the prevention and treatment of numerous chronic diseases. As with smoking cessation and weight control, all health professionals are well placed to tackle Irelands growing issues with physically inactive lifestyles. This article outlines how you can start to integrate exercise advice into your own clinical practice, whilst encouraging you to refer on to local exercise professionals, such as physiotherapists or fitness instructors as appropriate. So, why not prescribe a dose of this wonder drug to your patients today?

References

- [1] MacAuley D. A history of physical activity, health and medicine. *J R Soc Med* 1994;87:32–5.
- [2] Colberg SR, Sigal RJ, Fernhall B, Regensteiner JG, Blissmer BJ, Rubin RR, et al. Exercise and type 2 diabetes: the American College of Sports Medicine and the American Diabetes Association: joint position statement. *Diabetes Care* 2010;33:e147-67. <https://doi.org/10.2337/dc10-9990>.
- [3] Moore SC, Lee IM, Weiderpass E, Campbell PT, Sampson JN, Kitahara CM, et al. Association of leisure-time physical activity with risk of 26 types of cancer in 1.44 million adults. *JAMA Intern Med* 2016;176:816–25. <https://doi.org/10.1001/jamainternmed.2016.1548>.
- [4] NT L, Cox K. The influence of exercise on brain aging and dementia n.d.
- [5] Engels M, Cross RK, Long MD. Exercise in patients with inflammatory bowel diseases: Current perspectives. *Clin Exp Gastroenterol* 2018;11:1–11. <https://doi.org/10.2147/CEG.S120816>.
- [6] Radtke T, Nolan SJ, Hebestreit H, Kriemler S. Physical exercise training for cystic fibrosis. *Cochrane Database Syst Rev* 2015;6:CD002768. <https://doi.org/10.1002/14651858.CD002768.pub3>.
- [7] Brand S, Colledge F, Ludyga S, Emmenegger R, Kalak N, Sadeghi Bahmani D, et al. Acute Bouts of Exercising Improved Mood, Rumination and Social Interaction in Inpatients With Mental Disorders. *Front Psychol* 2018;9:249. <https://doi.org/10.3389/fpsyg.2018.00249>.
- [8] ACSM. Exercise is Medicine n.d. https://www.exerciseismedicine.org/support_page.php/health-care-providers/.
- [9] ACSM. Health Care Providers' Action Guide. 2019.
- [10] Adams R. Revised Physical Activity Readiness Questionnaire. *Can Fam Physician* 1999;45:992, 995, 1004–5.
- [11] Department of Health and Children, Health Service Executive. The National Guidelines on Physical Activity for Ireland 2014.
- [12] Ireland H, Department of Health, MRBI I. The Healthy Ireland Survey. 2016.