

**Chapter 1 : Clinical Exercise Physiology, 3E: Exercise prescription for obese patients**

*Exercise prescription commonly refers to the specific plan of fitness-related activities that are designed for a specified purpose, which is often developed by a fitness or rehabilitation specialist for the client or patient.*

Exercise promotion is not a new concept. The ancient Greeks were among the first to promote exercise with Hippocrates himself stating: Little progress was made from then until the 1930s, when a physician named McKenzie was one of the first to think of exercise as a medical treatment for chronic disease rather than an activity reserved for the physically fit. The government has tried to sell exercise as a low-cost, low-tech and non-drug intervention to improve the health and social welfare of the population. But how far has exercise prescription really come? And why has exercise awareness and promotion not progressed as far as other public health concerns such as smoking, diet, and alcohol? The World Health Organization WHO has reported that physical inactivity is one of the 10 leading causes of death in developed countries and results in about 1. Less openly known and discussed benefits of exercise include prevention against certain cancers, with studies demonstrating that physical inactivity can almost double the risk of developing colon cancer with other cancers such as breast, prostate, and lung following close behind. Doctors are also renowned for becoming obsessed with patient weight reduction and measuring BMI rather than increasing physical activity levels per se. Financial incentives are also given when done so appropriately. Exercise prescription is considered to be like any other prescription, with a type, dose, frequency, duration and therapeutic goal. The Swedish National Institute of Public Health has produced a comprehensive guide for physicians and describe physical activity promotion as one of their main healthcare objectives. Comparable benefits can be achieved through 75 minutes of vigorous intensity activity spread across the week and at least 2 days of the week activity should be aimed at improving muscle strength. Although the guidelines for people over 65 years are similar, older adults are encouraged to include activities that improve balance and coordination, especially if at risk of falls. Similar guidance can also be found for children, including infants. The ideal exercise regimen should consist of periods of warming up, endurance exercise, flexibility exercise, resistance training, and cooling down. By using the FITT principle exercise can be tailored for each individual patient to suit his or her lifestyle and health requirements. It is important to consider that the more intense an exercise is, the greater its effects usually are on fitness, but not necessarily in terms of health benefits. Perhaps the most crucial part of exercise prescription is adequate patient follow-up. Patient compliance is drastically improved when they have been set goals to achieve, and their progress is quantified. These include a scarcity of referral pathways, lack of time, not having adequate access to reference materials to guide them in the practical aspects of exercise prescription and lacking confidence in the services they are referring to. Furthermore, the referral process has no financial or quality incentives, such as Quality and Outcomes Framework QOF points. These points are emphasised by a lack of national coordination across the country. Perhaps the biggest limiting factor for physicians is a lack of knowledge on the subject matter or an underestimation on how much influence they have over helping patients modify their behaviour and lifestyle for example reducing sedentary lifestyles. This is something that is already changing as the field of sport and exercise medicine grows and is introduced into medical school curricula across the UK. An actual exercise prescription template is available for download and can be handed to the patient. However, it is up to the individual physician to demonstrate initiative and make prescribing exercise part of their daily practice. This is something that must undoubtedly change in order to combat future pressures on the healthcare system. Notes Freely submitted; externally peer reviewed. Competing interests The author has declared no competing interests. The role of exercise prescription in chronic disease. Br J Sports Med. Reducing risks, promoting healthy life The World Health Report. Physical activity counselling in sports medicine: Physical activity and reduced risk of colon cancer: Developing healthcare systems to support exercise: Professional Associations for Physical Activity. Physical activity in the prevention and treatment of disease. Swedish National Institute of Public Health; Start Active, Stay Active: Department of Health; Physical activity education in the undergraduate curricula of all UK medical schools: Assessing exercise limitation using cardiopulmonary exercise testing. Prescribing exercise in primary care.

**Chapter 2 : Exercise prescription - Wikipedia**

*A good exercise prescription is adaptable and flexible and can be modified often and easily while still moving you towards your goals. Adjustments are a constant and ongoing part of your exercise prescription for the rest of your life.*

But exercise is also one of the most effective ways to improve your mental health. Regular exercise can have a profoundly positive impact on depression, anxiety, ADHD, and more. It also relieves stress, improves memory, helps you sleep better, and boosts overall mood. Research indicates that modest amounts of exercise can make a difference. No matter your age or fitness level, you can learn to use exercise as a powerful tool to feel better. What are the mental health benefits of exercise? Exercise is not just about aerobic capacity and muscle size. Sure, exercise can improve your physical health and your physique, trim your waistline, improve your sex life, and even add years to your life. People who exercise regularly tend to do so because it gives them an enormous sense of well-being. They feel more energetic throughout the day, sleep better at night, have sharper memories, and feel more relaxed and positive about themselves and their lives. Exercise and depression Studies show that exercise can treat mild to moderate depression as effectively as antidepressant medication—but without the side-effects, of course. In addition to relieving depression symptoms, research also shows that maintaining an exercise schedule can prevent you from relapsing. Exercise is a powerful depression fighter for several reasons. Most importantly, it promotes all kinds of changes in the brain, including neural growth, reduced inflammation, and new activity patterns that promote feelings of calm and well-being. It also releases endorphins, powerful chemicals in your brain that energize your spirits and make you feel good. Finally, exercise can also serve as a distraction, allowing you to find some quiet time to break out of the cycle of negative thoughts that feed depression. Exercise and anxiety Exercise is a natural and effective anti-anxiety treatment. It relieves tension and stress, boosts physical and mental energy, and enhances well-being through the release of endorphins. Try to notice the sensation of your feet hitting the ground, for example, or the rhythm of your breathing, or the feeling of the wind on your skin. Your muscles may be tense, especially in your face, neck, and shoulders, leaving you with back or neck pain, or painful headaches. You may feel a tightness in your chest, a pounding pulse, or muscle cramps. You may also experience problems such as insomnia, heartburn, stomachache, diarrhea, or frequent urination. The worry and discomfort of all these physical symptoms can in turn lead to even more stress, creating a vicious cycle between your mind and body. Exercising is an effective way to break this cycle. As well as releasing endorphins in the brain, physical activity helps to relax the muscles and relieve tension in the body. Since the body and mind are so closely linked, when your body feels better so, too, will your mind. Exercise and ADHD Exercising regularly is one of the easiest and most effective ways to reduce the symptoms of ADHD and improve concentration, motivation, memory, and mood. Instead of thinking about other things, pay close attention to the physical sensations in your joints and muscles, even your insides as your body moves. Exercises that involve cross movement and that engage both arms and legs—such as walking especially in sand, running, swimming, weight training, or dancing—are some of your best choices. Outdoor activities like hiking, sailing, mountain biking, rock climbing, whitewater rafting, and skiing downhill and cross-country have also been shown to reduce the symptoms of PTSD. Other mental and emotional benefits of exercise Sharper memory and thinking. The same endorphins that make you feel better also help you concentrate and feel mentally sharp for tasks at hand. Exercise also stimulates the growth of new brain cells and helps prevent age-related decline. Regular activity is an investment in your mind, body, and soul. When it becomes habit, it can foster your sense of self-worth and make you feel strong and powerful. Even short bursts of exercise in the morning or afternoon can help regulate your sleep patterns. If you prefer to exercise at night, relaxing exercises such as yoga or gentle stretching can help promote sleep. Increasing your heart rate several times a week will give you more get-up-and-go. Start off with just a few minutes of exercise a day, and increase your workout as you feel more energized. When faced with mental or emotional challenges in life, exercise can help you cope in a healthy way, instead of resorting to alcohol, drugs, or other negative behaviors that ultimately only make your symptoms worse. Regular exercise can also help boost your immune system and

reduce the impact of stress. Reaping the mental health benefits of exercise is easier than you think. Wondering just how active you need to be to get a mental health boost? You can reap all the physical and mental health benefits of exercise with minutes of moderate exercise five times a week. Two minute or even three minute exercise sessions can also work just as well. Even just a few minutes of physical activity are better than none at all. Start with 5- or minute sessions and slowly increase your time. The key is to commit to do some moderate physical activity—however little—on most days. As exercising becomes habit, you can slowly add extra minutes or try different types of activities. If you keep at it, the benefits of exercise will begin to pay off. Be a weekend warrior. A recent study in the UK found that people who squeeze their exercise routines into one or two sessions at the weekend experience almost as many health benefits as those who work out more often. Get moving whenever you can find the time—your mind and body will thank you! That you breathe a little heavier than normal, but are not out of breath. For example, you should be able to chat with your walking partner, but not easily sing a song. That your body feels warmer as you move, but not overheated or very sweaty. But taking that first step is still easier said than done. Here are some common barriers and what you can do to get past them. But the truth is that physical activity is a powerful energizer. Studies show that regular exercise can dramatically reduce fatigue and increase your energy levels. If you are really feeling tired, promise yourself a 5-minute walk. If you have children, managing childcare while you exercise can be a big hurdle. Just remember that physical activity helps us do everything else better. If you begin thinking of physical activity as a priority, you will soon find ways to fit small amounts in a busy schedule. Exercise helps you get in shape. If you have no experience exercising, start slow with low-impact movement a few minutes each day. Feeling bad about yourself. Are you your own worst critic? No matter what your weight, age or fitness level, there are others like you with the goals of getting fit. Try surrounding yourself with people in your shoes. Take a class with people at a variety of fitness levels. Accomplishing even the smallest fitness goals will help you gain body confidence. Chair Exercises and Fitness Tips. Feeling pain. If you have a disability, severe weight problem, arthritis, or any injury or illness that limits your mobility, talk to your healthcare provider about ways to safely exercise. Divide your exercise into shorter, more frequent chunks of time if that helps, or try exercising in water to reduce joint or muscle discomfort. When we feel depressed, anxious, stressed or have other mental or emotional problems, it can be doubly difficult. This is especially true of depression and anxiety, and it can leave you feeling trapped in a catch situation. So, what can you do? Better to set yourself achievable goals and build up from there. Schedule your workout at the time of day when your energy is highest. That may be first thing in the morning before work or school, or at lunchtime before the mid-afternoon lull hits, or in longer sessions at the weekend. If depression or anxiety has you feeling tired and unmotivated all day long, try dancing to some music or simply going for a walk. Even a short, minute walk can help clear your mind, improve your mood, and boost your energy level. You may even feel energized enough to exercise more vigorously—by walking further, breaking into a run, or adding a bike ride, for example. Any activity that gets you moving counts. That could include throwing a Frisbee with a dog or friend, walking laps of a mall window shopping, or cycling to the grocery store. Activities such as gardening or tackling a home improvement project can be great ways to start moving more when you have a mood disorder—as well as helping you become more active, they can also leave you with a sense of purpose and accomplishment. That may be a quiet corner of your home, a scenic path, or your favorite city park. Reward yourself with a hot bubble bath after a workout, a delicious smoothie, or with an extra episode of your favorite TV show. Make exercise a social activity. Exercising with a friend or loved one, or even your kids will not only make exercising more fun and enjoyable, it can also help to motivate you to stick to a workout routine. Think about physical activity as a lifestyle rather than just a single task to check off. Look at your daily routine and consider ways to sneak in activity here, there, and everywhere. In and around your home. Clean the house, wash the car, tend to the yard and garden, mow the lawn with a push mower, sweep the sidewalk or patio with a broom. At work and on the go. Bike or walk to an appointment rather than drive, banish all elevators and get to know every staircase possible, briskly walk to the bus stop then get off one stop early, park at the back of the lot and walk into the store or office, take a vigorous walk during your coffee break. Pick fruit at an orchard, boogie to music, go to the beach or take a hike, gently stretch while watching

television, organize an office bowling team, take a class in martial arts, dance, or yoga. These tips can help you find activities you enjoy and start to feel better, look better, and get more out of life. Recommended reading Physical Activity and Mental Health â€” Details how being active can help depression and other mental health issues. Royal College of Psychiatrists The Exercise Effect â€” Discusses the mental health benefits of exercise and why it should be used more frequently in mental health treatment. American Psychological Association Exercising to Relax â€” How physical activity and autoregulation exercises can help reduce stress.

**Chapter 3 : Exercise prescription principles -**

*become physical fit, and guidelines for writing an exercise prescription. Information is provided on exercise precautions for individuals with specific health issues such as heart disease, diabetes mellitus.*

These recommendations are beyond the general recommendation of 1, to 2, kcal expenditure per week 30 min on most days for general health benefits. But this figure is less than the 2, to 2, kcal per week expenditure recommended by the National Weight Control Registry mentioned previously in this chapter. Therefore, the following exercise prescription recommendations are based on a weekly caloric expenditure of 2, to 2, kcal per week. This goal range is appropriate for all obese individuals, although some obesity class II patients and most class III patients will have to progress gradually to these higher levels of daily energy expenditure. Counseling about physical activity provided by a clinical exercise physiologist will help people develop realistic goals, establish appropriate exercise progression schedules, and gain control of their exercise programs.

**Cardiovascular Exercise** Initially, exercise and physical activity should focus on cardiovascular i. The primary reason for this approach is to focus on the greatest amount of energy expenditure possible in a given period of time. To achieve the target of 2, to 2, kcal per week expenditure, exercise must be predominantly aerobic. Resistance training should be considered only after a regular aerobic program meeting the weekly caloric expenditure goal has been in place for a minimum of 1 mo. Exercise mode selection is important for enhancing adherence and reducing the risk of injury. Some people have preexisting musculoskeletal issues that could prevent certain modes of cardiovascular exercise. These issues often relate to pain in the lower back, hip, knee, and ankle joints that may be chronic. However, these problems may improve as weight is lost. The clinical exercise physiologist should assess any painful conditions and make recommendations to avoid this type of pain. In general, aerobic exercise should be categorized as either weight bearing or non-weight bearing. When possible, walking is the best form of exercise for several reasons. Walking has few disadvantages; all patients have experience with the activity and a goal to remain functional and independent. Walking is an excellent, low-intensity activity with little risk of injury. It is available to most patients and does not require special facilities. Neighborhoods, parks, walking trails, shopping malls, fitness centers, and so on offer walking opportunities. A minimum amount of attention is necessary, so socializing is easy and convenient. If a patient wishes to walk on a treadmill, care should be taken to assess the weight limits of the treadmill. Many are rated to handle only 150 lb kg. Issues relate to the ability of the walking board and motor to handle the weight of an individual. Treadmills especially designed for obese individuals up to 300 lb kg are available. Jogging should usually be avoided, especially in patients with no previous jogging history or people who have a preexisting musculoskeletal issue that may be aggravated by jogging. Some class I patients may be appropriate candidates for jogging. Non-weight-bearing exercise options include stationary cycling, recumbent cycling, seated stepping, upper body ergometry, seated aerobics, and water activities. These activities are useful at any time but are particularly useful for those with joint injury or pain. The clinical exercise physiologist should adapt these modes of exercise by providing larger seats and stable equipment. People who are obese often have difficulty getting on or off these types of equipment or moving through the range of motion required by a given piece of equipment. For some individuals, seated aerobics may be an excellent option to reduce the typical orthopedic limitations that some people experience, including back, hip, knee, and ankle pain. In extremely obese individuals, it is important to use a chair that is rated to handle a very heavy body weight. In some chair aerobic exercise routines, the force on the chair from the movement and body weight can be quite large. Water provides an alternative to walking or aerobic dance activities performed on land. The buoyancy of water takes much of the body weight off the joints. Additionally, patients who experience heat intolerance with other activities are often more comfortable performing water-based exercise. Most patients are not efficient swimmers, so swimming laps should be avoided. An experienced exercise leader can make a workout session fun and effective. For example, the resistance of the water can be used creatively to increase intensity. Many patients do not consider water activities because of the effort necessary to get into and out of the pool and because of their concern about their appearance in a bathing suit. The

exercise physiologist should work to overcome these issues by using zero-entry pools and locations where the public does not have a direct view of the aquatic facility. Frequency Behavioral changes in activity must be consistent and long lasting if the patient is to lose weight and maintain weight loss over the long term. Daily exercise and physical activity at the recommended levels of duration and intensity are required to achieve and sustain long-term, significant weight loss. All people who are obese can exercise daily, typically from the beginning of a program. Altering the exercise mode may also help reduce the risk of injury. Intensity The intensity of exercise must be adjusted so that the patient can endure up to 1 h of activity each day. People without significant comorbid conditions can perform at these intensities in either a supervised or a nonsupervised setting. Many individuals who are obese are hypertensive and may be taking a b-blocker. This possibility must be considered when intensity is prescribed using heart rate. Typical rating of perceived exertion values of 11 to 15 6 to 20 scale may be substituted when assessing heart rate is not convenient. Duration For those with little or no previous recent exercise history, beginning with 20 to 30 min each day is appropriate. Breaking this exercise time into two or three sessions per day of shorter duration 5 to 15 min may be required for highly deconditioned people. Progression of approximately 5 min every 1 to 2 wk, until the person can perform at least 60 min of exercise, is usually appropriate. This progression scheme is intended to increase compliance to the duration of each session as well as to daily exercise. An accumulation of time over several sessions in a day is as beneficial as one continuous work bout with respect to total caloric expenditure. Besides performing this intentional exercise duration, all obese people should be continuously encouraged to maximize daily physical activity by considering all options. For instance, they could park at the far end of the parking lot when visiting a store or get off one or two stops early when taking public transportation. The duration of daily physical activity should typically not be restricted unless the individual appears to be suffering from effects of excessive activity. But the contribution of incidental exercise to total caloric expenditure is significant and may be as beneficial as that of the planned exercise 6. Intensity and duration must be manipulated so that the intensity is low enough to allow suitable duration to expend the recommended caloric energy. For many obese patients, the intensity will not be great enough to improve cardiovascular fitness. The initial focus, however, should be on weight loss and therefore caloric expenditure. As the exercise progresses and the individual is able to better tolerate the exercise routine, higher-intensity activities should be encouraged. An exercise program for obese patients should include both the supervised and nonsupervised phases with adaptations in modes, intensity, duration, and frequency to provide adequate calorie expenditure while preventing soreness and injury. Patients should be physically active a minimum of 60 min each day, including the days of supervised exercise; therefore, they may have to supplement with walking to accumulate 60 min. The remaining days of the week d can be nonsupervised with self-reported exercise to accumulate 60 min of physical activity each day. Resistance Exercise If resistance training is incorporated, careful attention must be given to beginning this type of program. Strength equipment may not be an option for some morbidly obese individuals. This plan will allow the person to perform 6 to 10 exercises in a 20 to 30 min session. These exercises should focus on the major muscle groups of the chest, shoulders, upper and lower back, abdomen, hips, and legs. The primary acute benefit of the prescribed resistance program is to improve muscle endurance; the secondary benefit is to increase muscle strength. For obese individuals, the long-term benefit may be related to a higher resting metabolic rate RMR and protection of lean mass loss during rapid weight loss attempts. Range of Motion Obese patients may have a reduced range of motion as a result of increased fat mass surrounding joints of the body 46 , in conjunction with a lack of stretching. As a result, these patients often respond slowly to changes in body position and have poor balance. Persons who are obese are also at a greater risk of low back pain and joint-related osteoarthritis because of their condition 35. Therefore, range of motion may improve spontaneously with weight loss. Still, to the degree possible, patients should perform a brief flexibility routine focused on the legs, lower back, and arm and chest regions. Normal flexibility routines see chapter 5 are recommended as tolerated. More excerpts from this book.

**Chapter 4 : Exercise prescription: what does it mean for primary care?**

*The Exercise Prescription for Depression, Anxiety, and Stress Everyone knows that regular exercise is good for the body. But exercise is also one of the most effective ways to improve your mental health.*

Darling, MD Through multiple studies, the benefits of exercise are well known. If benefits of exercise and physical activity were available in pill form, it would likely be the highest selling medication in the U. However, despite the known benefits of exercise, physical activity levels are not regularly part of the physician visit. One study revealed that only a third of U. In fact, we might not be counseling our patients due to our own inactivity. These numbers need to be improved because exercise advice specifically recommended by a physician is much more likely to be heeded. Type 2 Diabetes has reached epidemic levels in the United States with over 24 million people having the disease. An additional 60 million may be prediabetic. The effects of exercise include improved blood glucose uptake into muscle tissue via a mechanism that is not impaired by insulin resistance during muscle contraction as well as improved insulin action that continues even after exercise session is done. This recommendation is a significant part of lifestyle changes recommended. With concomitant weight loss, cholesterol levels improve, as does blood pressure [iv]. In addition, systemic inflammation is reduced. Another well-established group of benefits resulting from regular physical activity is that for the musculoskeletal system. As we age, we lose muscle power and strength, balance, and bone density. Aerobic training leads to increased maximal aerobic capacity and decreased large artery stiffness. Resistance training increases muscle mass and power. Enhancing these factors is associated with increased ability to perform self-care, housework and outdoor activities, especially important in the aging population. In addition to advances in function, regular exercise can lead to better bone health. Regular weight bearing PA has been shown to lessen the age-related decline in bone mineral density and to increase peak bone mineral mass in children and adolescents. Even the frailest patients should be as active as their health allows due to the rapid decline in BMD seen during bed rest and inactivity. The effects that regular exercise has on well-being and psychosocial health has been well documented. It can also lead to improvements in school and work productivity. However, an exercise prescription should now be generalized to a population for the treatment of inactivity and obesity and prevention of and treatment for their related conditions. A familiar way to encourage patients to increase their physical activity is to use something we write everydayâ€”the prescription. By using the FITT principle, an exercise prescription can be written in a way that is similar to a typical medication prescription. According to the Physical Activity Guidelines for Americans for general health maintenance, most adults should be performing 2 hours and 30 minutes of moderate intensity cardiorespiratory exercises weekly. An alternative recommendation is for vigorous intensity activity for at least 20 minutes, three days weekly. The American College of Sports Medicine also recommends days of resistance-based exercises that work all muscle groups, including arms, legs and trunk. The recommendations for maintenance range from days weekly. However, there is leeway in prescribing frequency of activity. One principle that is consistent is that the frequency can be increased over time to achieve maintenance or weight loss goals. It is not practical or safe for a person to perform all minutes in one session weekly. Adults should be encouraged to progress resistance training to work major muscle groups days per week. It is an important factor to consider when writing the prescription because it may lead to adverse event. Though low and moderate intensity activities can typically be recommended safely, high or vigorous activity should be evaluated more closely. Patients can and should be taught how to judge the intensity of their activity. There are different ways to gauge cardiovascular exercise intensity. Absolute measures have been developed; the most common is the MET or metabolic equivalent. However because people of different ages, weights, strengths and fitness levels exist, absolute measures of intensity cannot predict how the activity is tolerated. Therefore, relative measures of intensity are more useful. The Talk test is an effective prescriptive tool. Moderate intensity allows talking but not singing. Finally, vigorous activity allows neither conversation nor singing. Patients who are at higher risk with physical activity should still be encouraged to be active. However, they require closer monitoring and supervision. Percentage of heart rate reserve and maximal heart

rate can be used. If deemed necessary, these and other physiological measures can be used in a monitored setting i. Muscle strengthening activities are an important component of an exercise prescription. The muscles need to work in order for the patient to achieve benefit. However, intensity varies between persons depending on previous activity level, gender, age, etc. The patient should choose a weight that allows them to perform repetitions but forces them to fatigue the muscle [x].

**TIME** For aerobic activity, the weekly recommendations total minutes for health maintenance. They increase to minutes per week for significant weight loss [xi]. Physical activity should be performed on a daily basis though 5 days per week is thought to be acceptable. The exercise sessions do not need to be in a continuous session. Multiple short bouts of exercise of 10 minutes are thought to be beneficial.

**TYPE** The type of exercise performed should be discussed with the patient. The best type of exercise is one which the patient can and will perform regularly. There should be some variety to limit overuse activity. Simple exercises such as walking or using body weight for resistance training are often the best choices. If people are able to incorporate these activities into their everyday life gardening, walking or biking to work, using a walk-behind mower, they are more likely to maintain activity.

**PROGRESSION** Whether because of fatigue, discomfort or lack of confidence in their ability, people who push or who are pushed too hard when beginning an exercise program often do not continue their activity. Therefore, it is important to have a discussion with your patient about where to start.

**Conclusion** A program of regular physical activity is essential to maintain and improve the health and function of most adults. The benefits of exercise far outweigh the risks of injury. Even the most disabled or frail adults can achieve the goals stated, with the evaluation and guidance of trained medical professionals. The exercise program, or prescription can be modified to fit the health, physical ability, and lifestyle of the patient. In addition, as these factors change, the plan can be adjusted.

Physical counseling about exercise. *British Journal of Sports Medicine*; Guidance for Prescribing Exercise. A Tool to Improve Physical Activity.

**Chapter 5 : Exercise and Older Patients: Prescribing Guidelines - - American Family Physician**

*blog.quintoapp.com is a resource for the exercise professional, coach, or fitness enthusiast. It offers evidence based exercise prescription tools and resources including reference articles, comprehensive exercise libraries, and fitness calculators.*

Do you remember the story about cardiac non-disease in children? The parents had been fully reassured about the innocence of the murmur. At the opposite extreme, one of the authors Peter Davies remembers going out climbing with a friend at university. At lunchtime his friend calmly pulled out his insulin syringe and injected himself. Up till then he had had no idea that his friend was diabetic. To his friend, diabetes was simply something he dealt with. The friend was considerably stronger and fitter than Dr Davies. Two papers in this issue raise the question of what we should tell people with chronic illnesses about exercise. Is this another example of a way in which doctors can create iatrogenic harm? On the plus side, some parents and children did recall being encouraged to exercise by doctors and practice nurses. Even then the advice was not always well tailored and specific to the patient. As so often in disease management we find inconsistent recommendations by professionals and inconsistent understanding by children and parents. This is despite the existence of clear national guidelines on exercise prescription. The basic message is that activity that has an external point, such as walking a dog, or walking with a friend, is more likely to be sustained than purely personal activity, such as going to the gym. Those who are inactive and so on the way towards developing type 2 diabetes need some persuading to become active. In the UK in we are in an odd position with regard to exercise. It is entirely natural, from an evolutionary perspective, for humans to be active. As a human society, and as individuals, we have arrived at a situation whereby exercise is seen as something unusual and abnormal, and as additional or extrinsic to normal life. The default has become one of inactivity, and what should be an entirely usual part of life has become separated from daily activity. The office world of jumping to conclusions and running ideas up the flagpole is not a recognisable form of exercise! We have a massive knowingâ€”doing gap between what we, whether professional or lay, all know about exercise and health and our doing anything with that knowledge. We live in a post-industrial, knowledge economy and forget that to keep our knowledge machines running we need a healthy body to support it. The Department of Health has been very active on this topic, producing much well written and evidenced guidance 4 , 8 over many years. Primary care trusts PCTs and local councils have collaborated to create exercise referral schemes. Whether these are effective or not is far from clear, particularly when taking a long-term perspective. The National Institute for Health and Clinical Excellence NICE has produced some guidelines on brief interventions that primary care practitioners can use to encourage patients towards physical activity. It is like smoking cessation advice: That means the majority of our patients are inactive. Inactive lifestyle predisposes people to six major diseases: Exercise throughout life does reduce the risk of illness and injury; for example, by reducing the risk of falls in older people. If our patients do show any interest then do we know exactly what to recommend? It is doubtful that most doctors and practice nurses know exactly what exercise to recommend to which patient, 14 and this may be one reason why exercise recommendations are neglected in clinical contexts where they could be helpful to patients, such as diabetes mellitus. It is clear that exercise is good for health and human flourishing. It both prevents many diseases and it also helps those with established disease to recover more effectively and function better. It is drugfree, easily available, and mostly low risk, especially at moderate to low intensities. And this is advice we should apply to ourselves, so that we are good examples, rather than dire warnings, to our patients. Notes Commissioned; not peer reviewed. Can Med Assoc J. The morbidity of cardiac nondisease in schoolchildren. N Engl J Med. Low exercise among children with asthma: A qualitative study of experiences and beliefs. Br J Gen Pract. Br J Gen Pract ; At least five a week: Evidence on the impact of physical activity and its relationship to health. Department of Health; Between health and illness. Ratey JJ, Hagerman E. Type 2 diabetes and dog walking: Effectiveness of exercise-referral schemes to promote physical activity in adults: National Institute for Health and Clinical Excellence. Four commonly used methods to increase physical activity. Detailed local area costs of physical inactivity by disease category.

## DOWNLOAD PDF THE EXERCISE PRESCRIPTION

On the state of public health: How much and what type of physical activity is enough? What physicians should tell their patients.

## Chapter 6 : Writing the Exercise Prescription – Sports Med Blog

*Exercise prescription is designed to modulate acute exercise programming variables to create the adaptations desired by the individual or sport. With aerobic exercise prescription, the type of exercise, duration of exercise, frequency, and duration is adjusted.*

Focus on improving functionality through cross-training; functional exercises include sitting and standing and stair climbing. Start with repeated short bouts of low-intensity exercise every day, progressively increasing the duration. Exercise affected joints using a pain-free range of motion for flexibility training. Cardiovascular exercise initially should be brief 10 minutes, adding five minutes per session until 30 minutes is reached; cardiovascular exercises may be weight bearing walking or nonweight bearing cycling, hydrotherapy. Contraindications Avoid vigorous, repetitive exercises that use unstable joints; overstretching; and morning exercise if rheumatoid arthritis-related stiffness is present. Avoid exercising joints during flare-ups. Discontinue exercise if patient has unusual or persistent fatigue, increased weakness, or decreased range of motion, or if joint swelling or pain lasts for more than one hour after exercise. Diabetes Special considerations Aim to expend at least 1, kcal per week equivalent to walking 10 miles. If weight loss is a goal, aim for more than 2, kcal per week. Before beginning an exercise program, patients should undergo a medical evaluation to assess cardiovascular, nervous, renal, and visual systems and the risk of diabetic complications. Contraindications Intense PRT may cause an acute hyperglycemic effect; basic PRT may cause postexercise hypoglycemia, especially in patients taking insulin or oral hypoglycemic agents. Patients with diabetes and concomitant retinopathy and overt nephropathy may have reduced exercise capacity. Peripheral neuropathy may be associated with gait and balance abnormalities; consider limiting weight-bearing exercises and addressing patient foot care. Polyuria may contribute to dehydration and compromised thermoregulation. Hypertension Special considerations Focus on aerobic activities that use large muscle groups. Patients should exercise 30 to 60 minutes, three to seven days per week to effectively lower blood pressure; daily exercise may be most effective. PRT should be combined with aerobic activity using lower resistance and more repetition; patients should follow proper form and breathing to prevent Valsalva maneuver. Beta blockers may attenuate heart rate response and reduce exercise capacity, and other medications may impair thermoregulation; therefore, patients should cool down gradually after exercise to prevent hypotension. Obesity Focus on daily activities that use large muscle groups and increase total energy expenditure. Patients should exercise 45 to 60 minutes, five to seven days per week. Initial intensity should be 40 to 60 percent VO<sub>2</sub> reserve with an emphasis on increased duration and frequency; progression to 50 to 75 percent VO<sub>2</sub> reserve will help the patient expend calories faster; a vigorous program may not be necessary if moderate activities such as walking are preferred and will promote compliance. Contraindications To prevent orthopedic injury, aerobic intensity and duration may be maintained at or below usual recommendations and modified as needed; nonweight-bearing aerobic activities or frequent rotation of modalities may be required. Equipment modifications may be required, because treadmills have weight limits and cycle or rowing seats may be too small; free weights may be used instead of weight machines, if needed. Because risk of hyperthermia during exercise is increased in patients who are obese, hydration and proper attire should be emphasized. Osteoporosis Special considerations Focus should be on improving balance and functionality. Frequency should include weight-bearing aerobic activities four days per week; PRT two or three days per week; flexibility five to seven days per week; and functional exercise e. Pain status will dictate the exercise plan; patients severely limited by pain should consult a physician before initiating an exercise program. Contraindications Avoid explosive movements and high-impact loading e. Peripheral arterial disease Special considerations Because patients with peripheral arterial disease are at a high risk of cardiovascular disease, an exercise stress test should be performed before the physician creates an exercise prescription; many patients are extremely deconditioned. Pulmonary disease Special considerations The minimum frequency goal should be three to five days per week; those with impaired functional capacity may benefit most from daily exercise; patients should initially exercise intermittently for 10 to 30 minutes per session until they progress to 20 to 30

minutes of continuous exercise. An exercise subspecialist should monitor initial training sessions, and modifications should be made in response to symptoms; patients may be taught to use a heart rate or a dyspnea scale to assess intensity. Walking is strongly recommended; stationary bicycling may be an alternative PRT with emphasis on shoulder girdle and inspiratory and upper extremity muscles is important. Information from reference Activity readiness questionnaires from the Canadian Society for Exercise Physiology are available at <http://> During the office visit, the physician should stress the importance of physical activity and introduce exercise options and guidelines. Support networks within the family and community are key to long-term exercise compliance and should be discussed. Physicians can improve compliance by making exercise programs social activities. Physicians may provide a take-home information packet including handouts on exercise-associated health benefits; resistance, aerobic, and flexibility training; and lifestyle modification, plus illustrations and guidelines for balance balls or other specialized exercise equipment. The patient can keep a log, including questions and barriers to exercise, that can be discussed at follow-up visits. For example, if the patient does not exercise because of inclement weather, the physician can discuss appropriate clothing, moving exercise indoors, or changing activities. Short-term support can include a brief phone call one week after the program begins. Finally, the physician should provide referrals for physical therapy or special assistance, if needed. Age should not limit exercise training 25 , 26 ; however, experts recommend a more gradual approach in older patients. For example, home-based exercise can be effective for physically or financially limited patients, 27 , 28 whereas patients who are frail or who have balance and agility problems may benefit more from supervised activities. Patients who usually do not exercise may enjoy moderately vigorous activities such as dancing or walking. PRACTICAL TIPS A Scandinavian study 29 suggests that older patients whose physicians had advised them to exercise were five to six times more likely to participate in supervised exercise classes, and men were more than 12 times more likely to perform calisthenics at home. Confirm that the patient understands the exercise prescription and its expected health benefits e. Translate new exercise-related information that is presented in the media. Recommend credible resources from which patients can get information about exercise. Encourage affordable community-based exercise and support programs. Foster a continued exercise and health message. Serve as a resource for the nonmedical personnel who implement community and home-based exercise programs e. Successful exercise prescriptions require collaboration between the physician and the patient. Collaboration with hospital-sponsored or hospital-approved exercise programs and physical therapy and community-based programs increases exercise accessibility and provides patient support while cutting costs. Physicians also should support personal, local, and federal initiatives that encourage increased physical activity. Table 6 includes resources for more information on creating exercise programs; many of these Web sites offer downloadable handouts.

## Chapter 7 : Exercise Prescriptions in Older Adults - - American Family Physician

*Writing the Exercise Prescription - Alisa H. Darling, MD. Through multiple studies, the benefits of exercise are well known. Regular physical activity has been shown to reduce the risk of developing cancers, Type 2 diabetes, Alzheimer's dementia, and to reduce the incidence of heart disease and stroke.*

Patient referral[ edit ] In the United Kingdom there is a scheme called "Exercise on prescription" in which doctors are able to prescribe exercise to those with conditions that benefit from it, such as asthma , depression , or obesity. The initiative particularly aimed to lower the rate of heart disease. National standards for such initiatives from doctors were established by the Department of Health in Exercise on prescription aims to prevent deterioration of conditions, and views exercise as a preventative health measure. Fitness classes or a course at the local gym are available on prescription at a reduced rate to people who might benefit from them. A green prescription is a referral given by a doctor or nurse to a patient, with exercise and lifestyle goals written on them. The term, used by health practitioners in New Zealand draws parallel to the usual prescriptions given to patients for medications, and emphasises the importance of exercise in improving their condition, and not relying on drugs. The green prescription is written after discussing the issues and goals in the consultation. Studies have shown that an increase in exercise, better sense of well-being, and a decrease in blood pressure results from using the method. A decreased risk of coronary heart disease has not been shown. This was shown in two studies, one by Swinburn , that surveyed patients in Auckland and Dunedin. Evidence shows that in addition to the general physiological, psychological and functional benefits gained from exercise, greater quadriceps strength has a mitigating effect on knee joint pain. One study shows a significant improvement for a randomized group of women with major depressive disorder engaging in a twice-weekly resistance training program compared to a control group. The reasons for this marked change is thought to have biochemical, physiological and psychosocial aspects. Peripheral arterial disease Blockage or closing of the arteries of the lower limbs impairs blood flow to the legs and results in significant reduction in physical capacity. Alternate exercise prescriptions to walking are considered. Aerobic exercises such as arm-cranking or cycling are recommended. Risk factors for disease progression should also be taken into account when aiming to improve waling ability. Functional capacity should be determined prior to commencement of prescribe exercise programs. Exercise that is not too strenuous is recommended. Such activities may include walking, swimming, gardening, cycling or golfing. Exercise recommendations[ edit ] According to Exercise and Sport Science Australia, a minimum amount of minutes of moderate intensity exercise or minutes of vigorous intensity exercise should be performed per week. Exercise should include both aerobic and resistance training. For greater health benefits, exercise should be performed regularly with no more than a two-day gap between training sessions. It an reduce the risks of coronary heart disease, diabetes mellitus and insulin resilience, hypertension and obesity as well as vast improvements in bone density and muscle mass. With aerobic exercise prescription, the type of exercise, duration of exercise, frequency, and duration is adjusted. For resistance exercise prescription, the type of exercise, total session volume, rest period, frequency, and intensity are determined. Exercise prescription can be divided into 5 components:

## Chapter 8 : The exercise prescription

*Formulation of individualized exercise program based on exercise frequency, intensity, and duration with consideration for the specificity of the training response, specific to the prescribed exercise method. An exercise schedule usually intended to increase the physical fitness of a previously.*