Keep Moving

East Gosford
Exercise Physiology
& Rehabilitation

EDUCATION PREVENTION EXERCISE

How To Manage Type 2 Diabetes with Exercise

Introducing East Gosford Diabetes Kick Start Program,
Including our Keep Moving Exercise Class

Exercise & Education Program for people with Type 2 Diabetes

Medicare supported for an Exercise Physiology assessment and 8 Group Exercise Sessions at no cost to the patient (Bulk Billed to Medicare)

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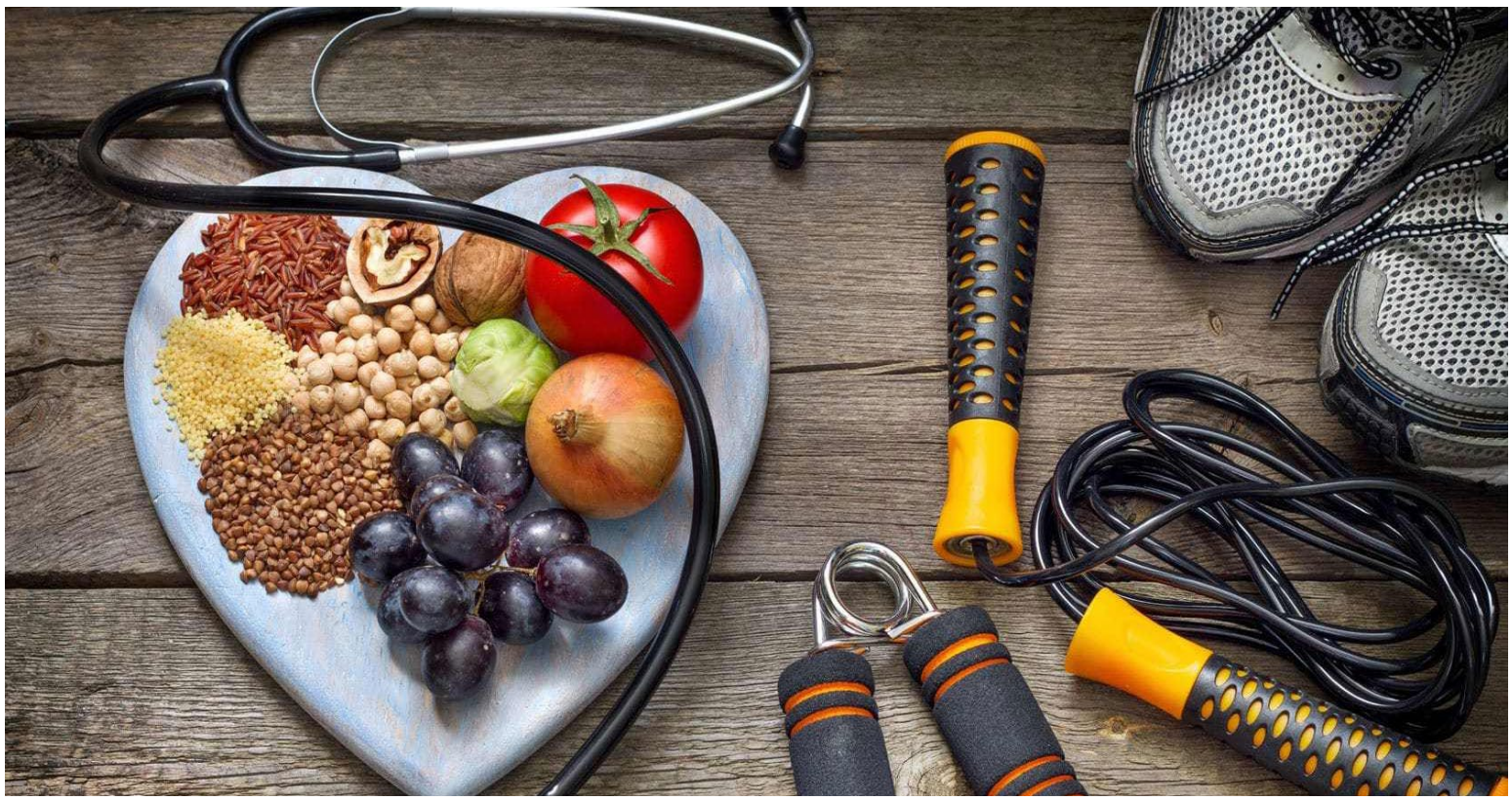

How to Proceed

You require a referral from your GP to our Exercise Physiologist under an Allied Health Group Exercise request/form (Your GP or Practice Nurse will organise this for you , and is required before we start if you want to proceed under Medicare)

Make an appointment to be assessed by one of our specially trained Exercise Physiologists, to ensure you are safe to proceed and to learn a bit about your Diabetes. (Phone 43237499 to make this appointment)

After your assessment your Exercise Physiologist will provide you with Diabetes Education and information on HOW to exercise safely. We advise you to have regular diabetic education to keep you up to date with the latest research and help you with motivation.

This education can come from a number of sources including, your Exercise Physiologist, Diabetic Educator, GP , Practice Nurse or Dietitian .

You will then be introduced to exercise options which include:
1. One on one exercise advice
2. Class based exercise – *Keep Moving (https://youtu.be/UxVnHkFA7ZM)

Your Exercise Physiologist will advise you on your best course of action.

This booklet is an excellent resource of information to help you in your Type 2 Diabetes and exercise education.

You will be advised by your Exercise Physiologist if it is appropriate that they spend more time with you, away from the exercise programme to expand on the education in this booklet.

You will need to organise a separate 30 minute appointment to receive this information and it is not included in your Medicare funded class sessions.

* Keep Moving is only available if you are fit and safe enough for an exercise class and you will be advised by your EP after the assessment.

You will be emailed a copy of this booklet after your initial consultation with the Exercise Physiologist or you may purchase a printed copy from reception for a nominal price to cover printing costs

EAST GOSFORD DIABETES KICK-START PROGRAM

1. WHAT IS DIABETES?

Basic Physiology

• Diabetes is a medical condition characterised by abnormal levels and function of a hormone called insulin; the most common forms of diabetes are type 1 and type 2.

• To understand diabetes, it's best to first understand what normally happens.

• When digested carbohydrates from a meal are absorbed into the bloodstream the blood sugar (more commonly called blood glucose) is temporarily increased.

• A channel exists between your blood and body cells and this channel is normally locked. Insulin is "the key" to unlock this channel.

• The pancreas releases insulin which unlocks the channel and allows the glucose to pass from the blood into the cells where it can be utilised. This process lowers blood glucose levels.

• Type 1 diabetes occurs from an auto-immune response whereby the immune system destroys cells in the pancreas that release insulin, meaning very little insulin is released to transport glucose into the cells.

• Type 2 diabetes occurs from poor lifestyle choices e.g. physical inactivity and poor diet, which lead to large increases of insulin, rendering it defective over time i.e. the cells become resistant to its effects (a state called insulin resistance).

• Both of these mechanisms lead to a state of chronically elevated blood glucose levels, which is called hyperglycaemia. The body remains in this state unless action is taken e.g. exercise.

Secondary health problems caused by diabetes

Secondary complications can arise from diabetes that can affect multiple bodily systems and organs. These include:

- **Cardiovascular –** heart disease and heart attack, high blood pressure, stroke and disease of the blood vessels, peripheral vascular disease
- **Nervous –** dizziness, abnormal senses and impaired movement, peripheral neuropathy
- **Gastrointestinal –** delayed emptying of the stomach, diarrhoea and constipation.
- **Visual –** retinopathy (a leading cause of adult blindness), cataracts and glaucoma.
- **Urinary –** bladder infection and erectile dysfunction.
- **Kidneys –** nephropathy (disease of the kidneys).

Exercise as Medicine

Exercise as Medicine is an increasingly recurring theme in the field of chronic disease, and for good reason. The effects of exercise, work like medications on certain conditions, however often with far less side effects and, in many cases, none at all. In the case of type 2 diabetes exercise works to control blood glucose levels, which can occur without the need of losing weight.

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Benefits of exercise are Independent of Weight Loss

• Exercise can cause muscle and liver cells to become more sensitive to the effects of insulin i.e. reducing insulin resistance (the hallmark of type 2 diabetes).

• Muscle contraction from exercise initiates critical signalling mechanisms which allow glucose to pass from the bloodstream into the muscle cells without the need for insulin. This effect is present during the entire exercise session and can last for 24-48 hours afterwards.

• When the stored glucose (glycogen) in the muscles and liver is depleted from exercise, both muscle and liver can draw upon blood glucose to replenish glycogen.

• Exercise can combat some of the underlying processes of type 2 diabetes that are seen early on in the genesis of the disease which include reducing inflammation (which is significant in type 2 diabetes) and reducing the toxic effect of high blood glucose.

• Exercise can improve the function and increase the number of proteins that transport glucose from the bloodstream into the cells.

How exercise may make you feel

• If you're new to exercising, you can expect to experience muscle soreness 1-2 days after an exercise session. This is called Delayed Onset Muscle Soreness (DOMS).

• When you exercise at levels above normal intensities a small amount of soreness can occur in the following 48 hours. The reason for this isn't fully known but it may be from mechanisms including the release of certain by-products from exercising and possibly changes to muscle structure for the better as it may increase muscle mass and strength.

• It's important to understand that this soreness is normal, temporary and low intensity; in fact it's not uncommon for people to feel a bit of morning stiffness which loosens up with movement.

• As the body becomes accustomed to regular exercise, the intensity of DOMS tapers off, and becomes less noticeable.

• It is however important to distinguish this type of soreness/stiffness from actual pain.

• If the soreness is extreme making it difficult to move, if one or more regions of the body are actually hurting and/or it is more in the joints as opposed to the muscles, then this should be seen as bad soreness or pain. This can result from exercise intensities that are too high, performing an exercise incorrectly or due to injury. Please discuss this with your Exercise Physiologist, as a Physiotherapy assessment may be appropriate.

Our partner organization East Gosford Physiotherapy can help you with this.

2. EXERCISE AND TYPE 2 DIABETES – HOW & WHY KEEPING IT GOING AT HOME

Why do I need to exercise?

To achieve good health and management of your diabetes, you need to get enough regular physical activity. Exercise can become an enjoyable part of your day with long term benefits of diabetes and overall health.

For the person with diabetes, physical activity helps to:
- Lower blood pressure and cholesterol levels
- Control body fat levels
- Control blood glucose and reduce risk of developing diabetes complications (see Week 1, Class 1)

Other positives include:
- Increased energy levels
- Improved mood
- Improved sleep
- Stronger bones
- Reduced stress and anxiety

Developing a home program

- Aerobic exercise – select activities that use large muscle groups e.g. walking, swimming and cycling.

- Resistance training (exercise that requires moving against some kind of resistance) – select activities that use large muscle groups, e.g. squats, push ups and lunges.

- We will help you understand this over the Kick-Start Program.

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What do I do before and during my exercise sessions?

Preparing for your exercise session

• Measure blood glucose before exercise – if the result is lower than 4, consume a quick acting source of glucose e.g. jelly beans, and continue to retest until your blood glucose level is higher than 4 but lower than 13*, and is stable at this level.

• Wear good quality, well fitting, enclosed footwear – talk to one of the physiotherapists and/or exercise physiologists if foot pain develops.

• Have ready to go:

1. a source of quick acting glucose
2. a bottle of water to stay hydrated
3. a diabetes identification tag, especially if you plan to exercise alone and away from home.

• Perform an adequate warm up – this usually consists of physical activity that is at a lower intensity of the exercise you're about to do and should last for 5 minutes minimum, eg. 5 minutes of normal walking before commencing a 30 minute walk.

• Remind yourself that this exercise session and subsequent sessions will lead to you gaining control over your diabetes.

* It is at this level which symptoms of high blood glucose levels typically occur, however if you have no symptoms, then you can commence low to moderate exercise.

During your exercise session

• Drink your water frequently throughout the session to keep hydrated.

• Maintain correct exercise technique – whilst this will have little to no effect on blood glucose levels, it's still important to ensure protection and improved function of your joints.

• Practice good hygiene to prevent infections, particularly in gyms.

After your exercise session

• Perform a cool down – progressively reduce the intensity of which you're working at to a point that's close to resting and perform some stretching if necessary.

• Test blood glucose immediately – ensure it is above 4 and stable before you move on, especially if you need to drive (note: you may notice a rise however this is usually temporary).

• Check your feet – check for signs of redness, blisters, cracks and calluses.

• Consume a meal that consists, in part, of slow-releasing carbohydrate within 1-2 hours.

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What intensity of exercise is required?

Moderate intensity exercise

• You should aim to do at least 30 minutes of moderate intensity physical activity e.g. brisk walking every day. This can be two 15 minute sessions or even three 10 minute sessions. To achieve a level of moderate intensity, you need to notice your breathing and heart rate speeding up and even a light sweat.

• If you are trying to lose weight, you may need to aim for 60-90 minutes every day. This will depend on how active you are already and the food you eat.

Vigorous intensity exercise

• As an alternative to moderate intensity exercise, you may choose to do three 20 minute sessions per week of vigorous intensity exercise e.g. jogging, aerobics classes, running or strenuous gardening. (Check with your exercise physiologist or physiotherapist to ensure you are safe to undertake vigorous exercise).

Strength training

• Aim to include strength training twice a week in addition to either your moderate or vigorous intensity exercise. Perform 8-10 different exercises using all the major muscle groups. Repeat each exercise 8-12 times, completing two sets for each exercise. Make sure you lift a weight that you can lift 8-12 times but find difficult to lift on the last few repetitions.

• Strength training activities include body weight exercises such as sitting and standing from a chair or wall push ups, machine based exercises or free weight exercises such as lifting dumb bells.

VERY IMPORTANT

Warning signs to stop

• You should stop and rest if you experience chest, abdominal, neck or arm pain or tightness, or even vague discomfort. If you feel breathless, faint or light-headed or have any other unusual symptoms while exercising, you should stop. These symptoms mean you may have heart trouble that needs immediate care.

• If these symptoms do not settle within 10 minutes, you MUST call an ambulance to take you to the nearest hospital emergency department immediately. If the symptoms settle in less than 10 minutes, you should still go to your doctor as soon as possible for a check-up.

• This MUST be done before you commence more exercise.

• If you experience leg pain, stop until the pain goes away then you can resume your activity. Talk to your exercise physiologist or physiotherapist about this.

What happens if I have a "Hypo"?

If you're experiencing symptoms of a Hypo e.g. dizziness, feeling faint and/or light-headed, stop exercise immediately and sit down, consume quick acting glucose and test blood glucose. This means your blood sugar is too low and needs to be treated.

• Repeat the test every 10-15 min until blood glucose is above 4.

• Remain seated until symptoms have disappeared.

• Follow this up with slow acting carbohydrates e.g. sandwich with high fibre bread.

• Be very careful about continuing exercise; we suggest that you stop altogether, rest and start your session again at another time when your blood glucose is more stable.

Get to know your body's response to exercise

• As everybody responds differently, it is important to know your own blood glucose response to activity. Many of the early signs of a hypo (e.g. feeling faint, sweating and weakness) are also feelings you may have during physical activity and can go unnoticed.

• Talk to your exercise physiologist about this – he or she can help you determine the difference between response to normal exercise and symptoms of a HYPO.

Always warm up and cool down

• Don't forget to do this with your home program.

3. EXERCISE AS MEDICINE

Exercise can help prevent Type 2 Diabetes and improve your control of blood sugar.

Exercise can also
- decrease body fat
- decrease heart disease risk
- increase heart and lung fitness
- improve strength and posture

Remember, if you have better controlled blood sugar you may be able to reduce your medication.

Cardio vs. Strength

The two main types of exercise we will teach you in the program are Strength Training and Cardio Training.

• Strength or Resistance Training involves lifting weights or using a resistance exercise band.

• Cardio or Aerobic Training is heart/lung fitness and makes you exercise at a level which increases your heart rate, eg: walking, running, cycling.

Borg Scale

We will use a 10 point scale to encourage you with intensity of exercise. The Borg Scale is a measure of your perceived exertion (R.P.E.), where zero = no effect, 10 = extreme effort. Your instructor will ask you this and advise you on the level of effort you will need to put into your exercise.

Progressive Overload in Training

• We are creatures of habit and get used to an exercise routine and forget to progress it.

• Progressive overload in training is constantly challenging your muscles and heart by putting them through different workouts, so you don't adapt and stay in a routine.

• This can occur by:
- slowly adding weight (once it gets too easy)
- changing number of reps
- add more sets
- change exercise type to challenge muscles in different ways
- progressing intensity of cardio sessions

• Remember, once your body gets used to a program, it stops showing results. This happens regularly and at any age.

• So remember – always push yourself a bit harder and you will see greater changes in your body and health measures

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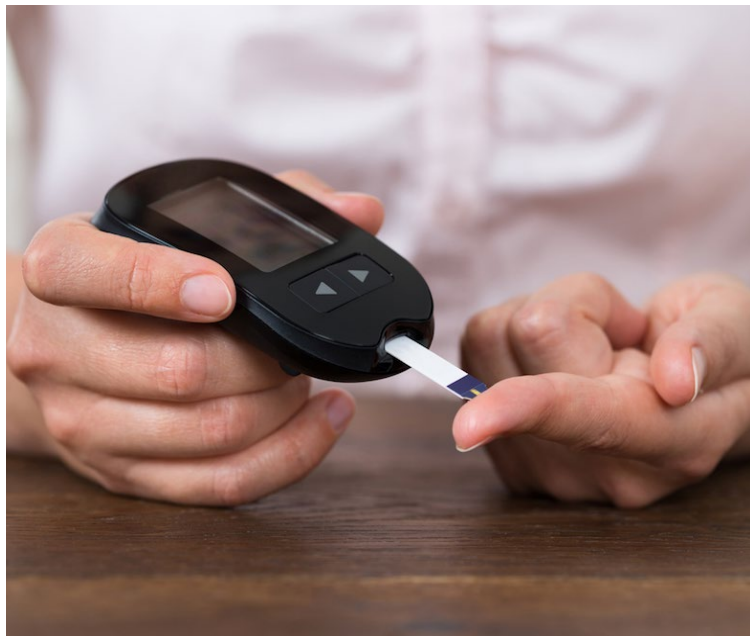
Exercise and Blood Sugar Levels – Getting It Right



• When exercising the body needs extra energy or fuel (in the form of glucose) for the exercising muscles.

• With continued moderate exercise, your muscles take up glucose at almost 20 times the normal rate – lowering blood sugar levels.

• However, with intensive exercise, you can have a temporary increase in blood glucose levels immediately after you stop exercising, especially if you have diabetes.

• The body sees intense exercise as a “stress” and tells your body to increase available blood sugar to fuel your muscles.

• Regular monitoring of blood glucose levels is especially important when you exercise as a self-management tool.

• Remember blood glucose ‘normal’ range is about 4-6 mmol/L (millimoles per litre of blood).

• The following are guidelines to follow to prevent your blood sugar levels from getting too high or too low:

- Exercise at the same time every day
- Have a carbohydrate snack – you will need 15-30g of carbohydrates for every 30’ of moderate exercise
- Check your blood sugar before you exercise and if less than 4 mmol/L, eat a carb snack or jelly bean
- If your blood sugar is too high (hyperglycaemia) – don’t exercise until your level is stable

Further testing with your Doctor

The HbA1c Test (Glycated Haemoglobin Test) shows an average of your blood glucose levels over the past 10-12 weeks. It doesn’t show the highs and lows, so it does not replace home testing. It helps in giving you an overall picture of your blood glucose management.

Working with a Dietitian

We strongly advise you discuss your diet and eating habits with a dietitian.
Our exercise Physiologist will have a brief discussion about your eating habits, however good advice in this area of food intake is essential.
If you don’t have a dietitian , we will recommend one for you.

4. SETTING GOALS AND OVERCOMING BARRIERS

Overcome barrier to exercise by changing habits

Achieving and maintaining a healthy weight isn't just about a diet or exercise, it is part of an ongoing healthy lifestyle approach that you can adopt now and stay with for years to come. Being aware of the obstacles that prevent us from changing helps us remove barriers. We can then develop strategies to address those barriers. Below are some common reasons that might prevent us from adopting a more physically active lifestyle and ways to overcome them:

- **Lack of time –** Monitor your daily activities for a whole week and identify available time slots where you can fit in 30 minutes of physical activity at least three times per week.
- **Social influence –** Explain your interest in physical activity to friends and family. Ask for their support and invite them to exercise with you.
- **Lack of energy –** Schedule physical activity for times in the day when you feel most energetic.
- **Lack of motivation –** Plan ahead by joining an exercise class or commit to meet a friend.
- **Fear of injury –** Learn how to adequately warm up and cool down. Choose exercise appropriate for your age and current physical condition. Learn how to exercise safely. Be assessed by a Physio , so you know you are safe.
- **Lack of skill –** Initially choose exercise that requires little or no new skills such as walking, stair climbing or stationary bike.
- **Lack of resources –** Identify inexpensive, convenient resources available in your community such as parks and recreation areas suitable for physical activity. Just start walking with music or a friend and see where it takes you.
- **Weather conditions –** Always have a backup for outdoor activities when the weather is unfavourable such as a gym or indoor swimming centre. An exercise bike or a treadmill at home can keep you on track (put it in front of the TV).

If you understand these barriers to exercise and get help where needed – you can break these barriers and easily make exercise part of your life and help control your diabetes.

How can I change my exercise and lifestyle behaviours?

A number of theories about human behaviour and change exist. One such theory by Kurt Lewin 1.(Schein E.H.,1996),proposes that change is a three stage process – unfreezing a behaviour, changing and then refreezing the new behaviour.

Stage 1

Is the unfreezing stage where you become dissatisfied with your current health status and develop the motivation to change. We realise the current situation isn't working and that ignoring the condition won't make things better. However, anxiety can slow down and impede this process, as such understanding the benefits of introducing the necessary lifestyle adjustments can significantly enhance positive outcomes.

Stage 2

Is making the change and introducing lifestyle modifications such as change of diet and attitude to exercise. Activities that can help us in this stage include:

- Be realistic – avoid trying to change everything at once
- Discuss the change with others around you and get their support and encouragement
- Find the support group, like East Gosford Diabetes Kick Start program
- Write down the changes you expect to see and put it on the wall, to give yourself a daily reminder
- Change your environment to support your change, such as getting unhealthy snacks out of the home or purchase some exercise equipment

Stage 3

Is the freezing stage where the changes are made permanent. This final stage is when the change becomes habitual and includes developing self-confidence and a positive self-image, taking charge and living for wellness and vitality.

1.Schein E.H., Kurt Lewin's change theory.1996, Systems Practice, Vol 9, No 1,

Goal setting – key to success

- Goal setting, or a planned approach, is effective in dealing with behaviour change.
- When we plan we are supplying ourselves with a framework in which to operate.
- We know there will be cyclical "ups and downs", however it is necessary to understand that real transformation to better health is not a "quick fix", rather it requires long term commitment and perseverance.

Achieving my personal health goals

- You would have set some goals in your initial assessment with your exercise physiologist.
- It is important to make these goals realistic and change them if they are not.
- Start with 3 simple goals and a suitable time frame to achieve them.
- Achieving these goals may take several steps in your program, so don't feel you need to rush it.
- We will help you stay on the program and once you have achieved these goals, you will be surprised how good it makes you feel and how it improves your confidence to keep going.
- You may have other personal health goals not just related to your Diabetes – this is the time to explore them and develop other plans.
- Remember, this may be just the "kick start" you need to make a change.

5. STAYING MOTIVATED

Stay on track – remember your goals

• You have taken the first step towards overcoming one the most common barriers to exercising, and that's making a start.

• Now the challenge is to maintain your enthusiasm towards this change as including exercise into your lifestyle, embracing a new approach to diet and overall switching to a positive behaviour towards your health.

• Preventing a relapse and sticking with the original plan often requires a constant reminder of your initial goals and why you sought lifestyle changes in the first place.

Here are some ideas that may help you stay on track

• Expect and plan for disruptions to your exercise program – schedule physical activities whilst away/on holidays eg. walking, using the hotel gym and swimming pool or bringing your Theraband along with you.

• Identify and plan for potentially risky situations – develop a strategy when something changes in your routine eg. eating out or experiencing a medical condition.

• Understand that relapses do occur and you shouldn't view them as a catastrophe – if you haven't been physically active due to time restraints, illness or other reasons simply do what you can during this time and build from that until you're back on track.

• Reward progress – treat yourself to something special as you achieve a goal or reach a milestone. Celebrate your success!

• Record your efforts in a diary or on a calendar – note the improvements that you've made e.g. increased days exercising or decreased time sitting, and compare them to previous recordings to see your progress.

• Plan social activities involving physical activity – social support from joining an organised group exercise class or starting up your own may help keep you motivated as well as enriching your social circle.

Re-establish Goals

• When goals have been accomplished it's important to set new ones to keep challenging yourself to attain further success.
• Like previous goals, write the new ones down as this may help as a reminder of what you're working towards.

6. WHAT NOW?

If you have finished you 8 medicare supported exercise sessions in our Keep Moving class,

This is just the start...

• Now you have a greater understanding of type 2 Diabetes and how it can be effectively managed with **EXERCISE** and **EDUCATION.**

• **The goal of these sessions is to "Kick-Start" your understanding of type 2 Diabetes so we strongly recommended you continue learning more about this condition.**

Great Websites:	Diabetes Australia	www.diabetesaustralia.com.au
	Australian Diabetes Council	www.australiandiabetescouncil.com

These are two very good websites which will give you a wealth of information about Type 2 Diabetes.

Information from both these websites was used in the development of East Gosford Diabetes Kick Start Program, and in writing this ebook.

Beyond "Kick-Start"

• We suggest you re-read this booklet and other sources of quality information ie. the websites above, at your convenience to reinforce and improve your current understanding of Type 2 Diabetes.

• Write down your goals and potential barriers to these goals – remember to update goals and barriers when appropriate.

• Plan your weekly physical activity schedule – this includes what exercises to do, the days you wish to exercise and the duration of each session. Also include in this plan how you can incorporate extra physical activity into daily life eg. using stairs instead of lifts or walking short distances instead of driving.

• **Keep attending Keep Moving at East Gosford Physio and Exercise Physiology**

• **Go to this link for more information about Keep Moving https://youtu.be/UxVnHkFA7ZM**

• Stay motivated – look for other sources of motivation like social support and positive feedback from your GP.

Regular exercise is the key

• We have shown you some simple exercises which can be performed at home or in a gym with basic, affordable equipment (which can be purchased at East Gosford Physiotherapy reception).

• Continuing with the “Kick-Start Exercises” is a great way to go, as hopefully this has been routine for the last 8 weeks. Try getting a friend or family member involved.

• Whatever exercise program you adopt remember that you will need to progress the program over time eg. increase repetitions, duration and/or resistance

• Make changes to your program (as you see fit) to avoid boredom.

• Modify parts of your program during episodes of pain instead of stopping exercise all together eg. if you have knee pain, reduce the depth at which you squat.

• In the presence of persistent and/or excessive pain, please let us know. Our partner organisation – East Gosford Physiotherapy & Sports Injury Centre, deals with this every day.

• Pain during exercise can reduce adherence to your exercise program however this pain is often treatable and can be managed with the correct advice and therapy.

• Reducing or stopping exercise due to pain may seem the logical option however consider the damaging effects this can have on blood glucose control. We strongly recommend that you don’t let pain interfere with your diabetes management.

What organised exercise programs are available?

• Our Keep Moving Program is a great way to stay motivated with your exercise program ,

• Most local gyms offer organised programs.

• Every program offered will differ from one another so we suggest you select the one that you’re most likely to stick with.

References for Content of this program.
Diabetes Australia www.diabetesaustralia.com.au
Australian Diabetes Council www.australiandiabetescouncil.com

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