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# Diabetes Educator's Focus

## EXERCISE AS TREATMENT FOR DIABETES: A PRACTICAL GUIDE TO EXERCISING

**P**eople with diabetes are often nervous about exercising for fear of complications. However, if they are active on a regular basis, they reduce their risks of cardiovascular disease more so than their inactive counterparts. Exercise plays an extremely important role in both the prevention and treatment of diabetes. In the past, emphasis was on medication, insulin and a low-calorie diet. Exercise was noted as part of the treatment protocols but was very seldom reinforced. Currently, the primary emphasis in diabetes therapy is exercise and balanced eating, in conjunction with medication if necessary.

**A biokineticist is an exercise therapist who assesses patients and prescribes exercise for various medical conditions. He/she is an integral part of the diabetes care team.**

*S Afr J Diabetes Vasc Dis 2009; 6: 33–36.*

### ANY EXERCISE IS BETTER THAN NONE

Exercise improves blood sugar control by increasing the rate of glucose uptake from the blood into the muscle, and the storage of it as energy. Glucose absorption is maintained for at least 48 hours post exercise.

Inactivity places the individual at a higher risk of heart disease and stroke than high blood pressure, high cholesterol and being overweight. The majority of individuals with diabetes develop the 'silent killer' or metabolic syndrome. Increased fitness levels provide substantial protection against further complications.

### HOW TO GET STARTED

Consult your biokineticist before initiating an exercise programme to ensure you are performing the correct exercise and making the necessary adjustments in your medication.

### THE THREE PHASES OF AN EXERCISE SESSION

**Warm-up phase:** five to 15 minutes in order to prepare the body for exercise. It stimulates the heart and lungs, and increases blood flow.

**Target phase:** aerobic workout lasting 20 to 40 minutes. The intensity of this segment should be between 60 and 70% of your maximum heart rate, which is

called your target heart rate (determined by your biokineticist on your initial consultation covered by the CDE programme).

**Cool-down phase:** five to 10 minutes cool down always follows the aerobic workout. It allows a gradual and safe decline in your heart rate and blood pressure.

### MONITORING YOURSELF

It is very important that you are able to gauge how much work your body is performing during all activities. Certainly, this is important while you exercise, but knowing your exertion level will give you a sense of control, and you will be able to adjust your exercise routine accordingly.

### MONITORING YOUR SYMPTOMS

Symptoms are how we are feeling. You may be feeling tired, but not look tired to others, or you may feel dizzy, but unless you tell someone about it, they may not notice it. Therefore, it is essential to inform others if you are experiencing symptoms that are unusual or cause you to worry about your health or safety. Examples of this could be pain in your jaw, arm, chest, back or shoulder blades, or indigestion, excessive sweating

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or shortness of breath.

Experiencing chest pain while walking may suggest you have exceeded your ability to perform that level of activity on that day. Unless you act appropriately in this situation (such as stopping the activity), further problems may ensue.

You should monitor your symptoms at all times, but try to be especially aware of them during your exercise sessions. If you cannot count to 10 without gasping for air, or are experiencing chest pain, extreme fatigue, or other similar symptoms, you should slow down or cease the activity immediately and seek help.

## MONITORING YOUR HEART RATE

Pulse monitoring is a much more objective, measurable way to gauge your level of exertion. Normally, the more you exercise, the faster the heart will beat in order to provide the additional oxygen it needs. Most people experience an increased heart rate when they exercise.

However, certain medications taken for cardiovascular complications block this response, to prevent the heart from overexerting. Due to the decreased flow of blood through blocked coronary arteries and the insufficient oxygen supply to the muscle, some people may experience chest pain (angina) or even a heart attack while exercising.

It is imperative that you know the purpose of each medication you are taking and how it may affect you during exercise. This is where your biokineticist can play a pivotal role in providing a safe exercise programme. (Ensure that your biokineticist is specifically trained in diabetes care.)

## HOW MUCH EXERCISE SHOULD I DO?

Approximately 60 to 90 minutes of brisk walking per day is not always practical. Thirty minutes of exercise daily, at a moderate intensity, is ac-

ceptable. Regular home exercise, sporting activities and work-related activities would also be appropriate.

## REMEMBER

- Wait at least one hour after meals before exercising
- Dress according to the weather
- Pace your activities.

## GENERAL GUIDELINES FOR EXERCISE

- The home exercise programme for diabetics (page 36) shows examples of appropriate exercises that can be done at home. They are designed to keep the muscles in good tone, prevent deconditioning, and improve one's general endurance.
- These exercises should be done only with the recommendation of your biokineticist.
- They should not be done if you feel excessively tired. If so, stop and rest.
- Make sure that you keep breathing regularly during all the exercises. Avoid any tendency to hold your breath or tense up your body.
- To reduce your risk of complications during exercise:
  - First, have your blood pressure checked regularly. Exercise helps control high blood pressure, as can losing weight or taking medication.
  - Have your cholesterol levels checked. If you have high cholesterol, exercise and medication will help lower the levels.
  - If you smoke, stop. Smoking compromises oxygen supply during exercise, thereby increasing your risk of stroke.
  - Avoid excessive intake of alcohol.

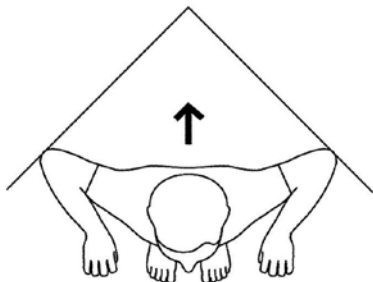
For warm-up and basic stretching exercises, visit [www.cvja.co.za](http://www.cvja.co.za)

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## HOME EXERCISE PROGRAMME FOR DIABETICS

### Iso shld retract



- Stand with your back to a corner.
- Raise arms to 90 degrees with elbows bent.
- Lean back into corner and hold body stable with arms.
- Use elbows and push into the wall

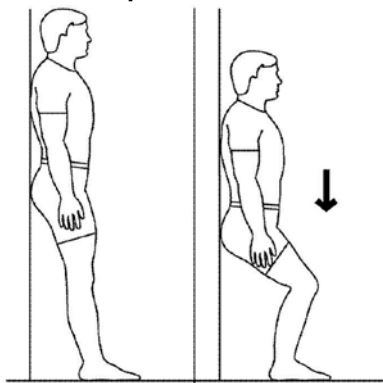
#### **Special Instructions:**

Do not hold breath.

Perform 3 sets of 6 Repetitions, once a day.

Rest 30 Seconds between sets.

### AROM knee wall slide bil partial



- Lean on wall, feet approximately 12 inches from wall, shoulder distance apart.
- Bend knees to 45 degrees.
- Hold 5 seconds.
- Return to starting position.

#### **Special Instructions:**

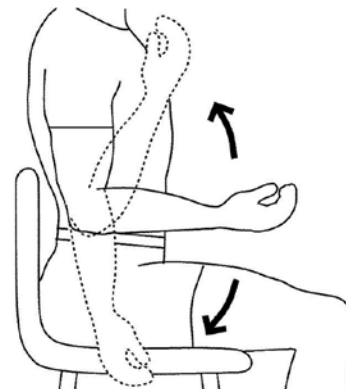
Ensure you can see your toes at all times . Do not let knees pass toes

Perform 3 sets of 6 Repetitions, once a day.

Rest 1 Minute between sets.

Perform 0 repetitions every 1 Seconds.

### AROM elbow flx/ext



- Sit .Begin with arm at side, palm up.
- Bend elbow upward.
- Return to starting position.
- Weights can be used to increase intensity

#### **Special Instructions:**

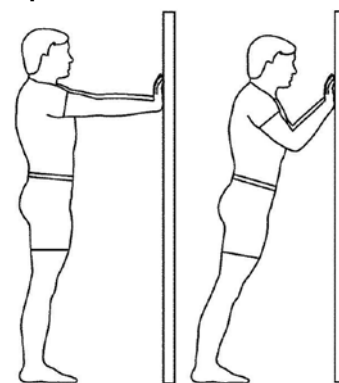
Breathe out on the difficult part Do not hold your breath

Perform 3 sets of 6 Repetitions, once a day.

Rest 1 Minute between sets.

Perform 0 repetitions every 1 Seconds.

### AROM shld push-ups at wall



- Stand facing wall, about 12-18 inches away.
- Place hands on wall at shoulder height.
- Slowly bend elbows, bringing face to wall.
- Push back up to start position and repeat.

Perform 3 sets of 6 Repetitions, once a day.

Rest 20 Seconds between sets.

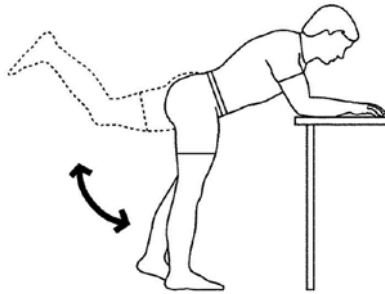
Perform 0 repetitions every 1 Seconds.

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## HOME EXERCISE PROGRAMME FOR DIABETICS

### AROM hip ext stand knee bent



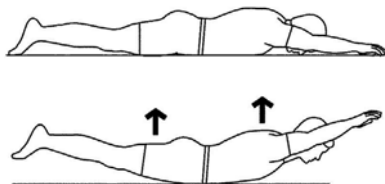
- Lean over table, bending at hips, stand on uninvolved leg.
- Bend knee slightly on involved leg.
- Lift involved leg up and backward as shown.
- Return to start position and repeat.

Perform 3 sets of 6 Repetitions, once a day.

Rest 20 Seconds between sets.

Perform 0 repetitions every 1 Seconds.

### AROM lumbar ext prone high level



- Lie face down with arms outstretched over head..
- Arch upward, raising arms and legs off floor.
- Return to start and repeat.

#### Special Instructions:

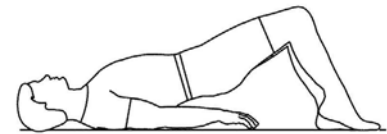
Progress by holding 2-3 seconds. You may not be able to lift arms . PRACTICE MAKES PERFECT

Perform 3 sets of 6 Repetitions, once a day.

Rest 20 Seconds between sets.

Perform 0 repetitions every 1 Seconds.

### AROM lumbar bridging w/heel raises



- Lie on back with knees bent and feet flat on floor.
- Lift buttocks up.
- Lower buttocks and repeat.

#### Special Instructions:

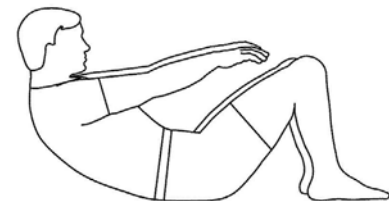
Keep tummy muscles tight

Perform 3 sets of 6 Minute, once a day.

Rest 20 Seconds between sets.

Perform 0 repetitions every 1 Seconds.

### AROM lumbar flx (crunches) supine arms straight



- Lie on back with knees bent, arms on thighs.
- Begin with head and slowly curl up lifting shoulders off floor, reaching to knees with arms straight.
- Keep low back in contact with floor.
- Slowly return to start position and repeat.

#### Special Instructions:

Exhale when you curl up

Perform 3 sets of 6 Repetitions, once a day.

Rest 20 Seconds between sets.

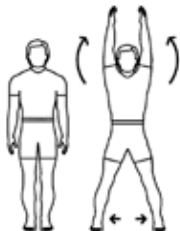
Perform 0 repetitions every 1 Seconds.

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## Exercise Program For: Warm up and Basic Stretches

### AROM jumping jacks



- Jumping Jacks is one way to elevate your heart rate before starting an exercise programme

Perform 1 set of 5 Minutes, once a day.

### AROM knee plyometric jumps side/side on step



- Stair hopping can also help increase heart rate
- Gradually increase speed each time to try the exercise until you can do a jump per second.

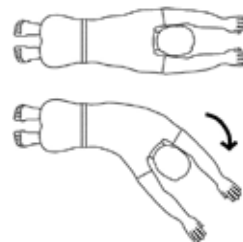
#### Special Instructions:

Repeat the jumps to the other side.

Perform 1 set of 5 Minutes, once a day.

Perform 1 repetition every 1 Second.

### Stretch Iliocostalis kneeling



- Kneel on heels .
- Lean forward, arms over head.
- Slowly stretch to right.
- Repeat to left.

Perform 1 set of 3 Repetitions, once a day.

### Stretch hamstrings supine active



- Lie on back holding knee pull toward chest.
- Gently straighten leg. Repeat on opposite side.

#### Special Instructions:

It is important to stretch after a warm up to prevent injury.

Perform 1 set of 3 Repetitions, once a day.

### Stretch Trapezius upper



- Place right arm behind back.
- Grasp arm with left hand as shown.
- Bend neck sideways to left as you pull your right arm.
- Repeat for other side.

Perform 1 set of 3 Repetitions, once a day.

### Stretch Rhomboids/Trapezius



- Sit in chair.
- Cross arms over abdomen.
- Slowly bend neck down.
- Slowly lean forward, keeping elbows straight and reach to floor.
- Hold and repeat.

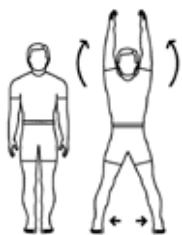
Perform 1 set of 3 Repetitions, once a day.

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Date Grid For:  
Warm up and Basic Stretches

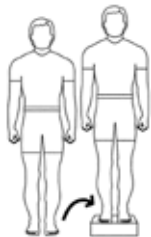
## 1. AROM jumping jacks



Perform 1 set of 5 Minutes, once a day.

	11/3	11/4	11/5	11/6	11/7	11/8
11/9	11/10	11/11	11/12	11/13	11/14	11/15
11/16						

## 2. AROM knee plyometric jumps side/side on step



Perform 1 set of 5 Minutes, once a day.

Perform 1 repetition every 1 Second.

	11/3	11/4	11/5	11/6	11/7	11/8
11/9	11/10	11/11	11/12	11/13	11/14	11/15
11/16						

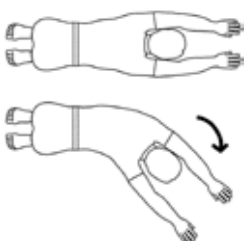
## 3. Stretch hamstrings supine active



Perform 1 set of 3 Repetitions, once a day.

	11/3	11/4	11/5	11/6	11/7	11/8
11/9	11/10	11/11	11/12	11/13	11/14	11/15
11/16						

## 4. Stretch Iliocostalis kneeling



Perform 1 set of 3 Repetitions, once a day.

	11/3	11/4	11/5	11/6	11/7	11/8
11/9	11/10	11/11	11/12	11/13	11/14	11/15
11/16						

## 5. Stretch Trapezius upper



Perform 1 set of 3 Repetitions, once a day.

	11/3	11/4	11/5	11/6	11/7	11/8
11/9	11/10	11/11	11/12	11/13	11/14	11/15
11/16						

## 6. Stretch Rhomboids/Trapezius



Perform 1 set of 3 Repetitions, once a day.

	11/3	11/4	11/5	11/6	11/7	11/8
11/9	11/10	11/11	11/12	11/13	11/14	11/15
11/16						

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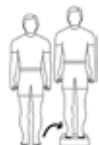
Chart Copy For:  
Warm up and Basic Stretches

AROM jumping jacks



Perform 1 set of 5 Minutes, once a day.

AROM knee plyometric jumps side/side on step



Perform 1 set of 5 Minutes, once a day.

Perform 1 repetition every 1 Second.

Stretch hamstrings supine active



Perform 1 set of 3 Repetitions, once a day.

Stretch Iliocostalis kneeling



Perform 1 set of 3 Repetitions, once a day.



Stretch Trapezius upper



Perform 1 set of 3 Repetitions, once a day.

Stretch Rhomboids/Trapezius



Perform 1 set of 3 Repetitions, once a day.