Exercise on Dialysis
Instruction Manual
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Introduction to Dialytic Exercise

What is an exercise physiologist?
An exercise physiologist is a university-qualified health professional who works to improve the health of patients with chronic conditions. As such, these health professionals are qualified to design exercise programs for patients with chronic kidney disease (CKD).

Why should I participate in exercise?
Undertaking a lifestyle that is mainly sedentary (that is, spending much of the time seated) has been directly linked to numerous negative health concerns such as:

- Obesity
- High blood pressure
- Lower quality of life
- Musculoskeletal problems, such as low back pain and muscle tightness

As dialysis requires patients to be seated for extended periods of time, the risk of developing these conditions is higher than normal. Therefore, the importance for you to undertake exercise is greater. Expected benefits of engaging in a regular exercise program include, but are not limited to:

- Weight loss
- Reduced muscle stiffness
- Improved blood sugar control
- Improved mental health
- Reduced risk of chronic disease progression
- Improved mental health
- Reduced risk of chronic disease progression
- Increased strength, power and flexibility
- Increased independence

What will my exercise routine consist of?
The exercises you will undertake are aimed to increase the strength and endurance you need to improve your quality of life, and to improve your ability to complete the activities you undertake each day. The range of exercises in this booklet are aimed to target each major muscle group you use regularly. These include:

- **Calf, quadriceps and hamstring exercises**: improve strength of lower limbs and promote correct walking style, reduce walking aid dependence and decrease falls risk.
- **Chest, back, bicep and shoulder exercises**: undertaken to improve functional abilities throughout the day, that is, carrying the shopping, cleaning, cooking and washing.
- **Abdominal exercises**: for those able, it’s important to encourage abdominal exercises to maintain correct posture, core strength, and decrease issues related to incontinence.

How much should I do?
We suggest that you complete the resistance exercises 2–3 times per week in order to really see the benefits the exercises can bring you. If you would like to complete your program more times than this, you are free to do so, as long as you monitor your fatigue levels and don’t push yourself too hard.

Each session will consist of you completing each exercise a certain amount of times, in several different lots. These are referred to as sets and repetitions. Repetitions are how many times you do the movement at once. Sets are how many groups of repetitions you do in your exercise session. Usually you have at least a 60-second rest in between each set.

For example: you may undertake 2 sets of 10 repetitions and have a 60-second rest in between the two sets.

Generally, it is advisable to start with 2–3 sets of 10–15 repetitions, dependent on how you feel. You can then undertake more or fewer repetitions or sets based on how easy or hard you find the session.

Are there any side effects I will experience if I undertake exercise?
Most individuals experience some form of side effects or discomfort during or following an exercise session. This is normal, and the most common side effects healthy individuals experience are delayed onset muscle soreness and fatigue. These side effects are temporary and get better the longer you undertake an exercise program. Due to the extra stress on the body, dialysis patients may experience some additional side effects such as:

- Increased initial fatigue levels post-exercise.
• Cramps, either during exercise or towards the end of the dialysis session. This is usually a temporary issue, which will generally ease as exercise continues. If cramps continue, however, your exercise therapist can instruct you on some stretching techniques to manage the cramping.

• Blood pressure changes and some bleeding from the needle insertion site can occur if you do not make sure that your fistula arm stays still. Try to keep your arm as relaxed as possible during exercises to avoid these side effects.

You are more likely to avoid these side effects by undertaking your exercises as close to the beginning of your dialysis session as possible.

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**Equipment**

**Resistance bands**

The main piece of equipment that you will be using during your exercises is a resistance band.

These bands come in different colours, which indicate their resistive strength. The darker the colour, the more difficult the band will be to stretch.

There are two colours available to you:

- Light green — medium-strength resistance
- Plum — strong resistance

Harder and easier bands do exist; however, the dialysis unit does not supply these. If you would like to purchase one of these other bands, you can enquire with those on the contacts page at the back of this book, or ask the dialysis staff to enquire on your behalf.

**Resistance band progressions**

Your exercise therapist or nurse will help you to recognise when the time is right for you to progress to the band at the next level of difficulty.

Generally an increase in resistance will occur when:

- You feel your band is too easy, and are confident to try something harder.
- When you are able to undertake the exercises with a safe and correct technique with the harder band. If you are not ready for the extra strength, your technique will suffer.
- You can complete over 20 repetitions of the exercise.

You do not have to upgrade to the stronger band for all your exercises at once. We suggest you only progress one section of your body at a time, so that the accumulative fatigue does not cause you negative side effects.

Similarly, just because you feel ready to use the stronger band one day, it doesn’t mean you always have to use it. If you are having an ‘off’ day or are feeling sore and/or cramping, feel free to revert back to the easier band.

**Cycle ergometer**

Some dialysis units are lucky enough to own a set of pedals that connect to the end of the dialysis chair. If your unit has one of these, feel free to incorporate it into your program. The nurses or exercise therapist will help you attach it.

Generally, they have a twist resistance knob, which will allow you to set the difficulty of the pedals, and straps so you can comfortably lie back without your feet coming out.

Depending on your fitness level, you may wish to try 60s pedalling forward, and 60s pedalling backwards. Increase this over time.

Be careful not to be too eager with your movement, though, as rocking through your pelvis can dislodge your dialysis needles.
Chest Press

Aim of the exercise
This exercise aims to increase your chest strength. This assists with your ability to push and carry things with less difficulty.

Exercise instructions
1. Based on what is more comfortable for you, either hook or tie the resistance band securely to the back of the chair, or loop the band around your shoulder/neck as shown in the photo.
2. Hold the band with your fist facing down towards the bed.
3. Slowly and with control, push your fist straight out in front of your body.
4. Return your fist to the starting position slowly. Control the movement and do not allow the resistance band to ‘snap’ you back to the starting position.
5. You should feel some fatigue in your arm and across the working side of your chest.

Shoulder Press

Aim of the exercise
This exercise aims to strengthen the arm and shoulder. This helps to assist in lifting and undertaking overhead movements with your arms.

Exercise instructions
1. Loop the resistance band under the top of your thigh as shown in the photo.
2. Hold the band with your palm facing your chest.
3. Push your fist towards the roof in a slow and controlled manner.
4. Keep your elbow close to your body. Do not allow your fist to travel forward, away from the body.
5. Return your fist to the starting position, but do not allow your fist to ‘snap’ back. Control the resistance on the way down.
6. You should feel fatigue on the top of your working shoulder.
Triceps Extension

Aim of the exercise
This exercise aims to increase the strength of your triceps, which assist in your ability to pull things and stabilise the arm during movements.

Exercise instructions
1. Either untie the band so it does not form a loop, or loop the band around your leg and hold onto the longest free end of the band.
2. If untied, put one end of the band under your leg so it is trapped securely.
3. Hold the band with your hand in a fist and point your thumb towards the roof.
4. Keeping your elbow straight, lift your arm towards the roof.
5. Try to avoid ‘shrugging’ your shoulder during the movement.
6. Slowly return your arm to the starting position.
7. You should feel fatigue on the front of your upper arm.

Straight Arm Shoulder Flexion

Aim of the exercise
This exercise aims to increase the shoulder muscles to assist in your ability to lift and carry objects.

Exercise instructions
1. Tie or loop the resistance band onto the back of the bed.
2. Hold the middle of the band like a ‘javelin’.
3. Keeping your elbow in the same position throughout, straighten your arm as shown in the photo.
4. Slowly return to the starting position by bending the elbow, but make sure the elbow position doesn’t move.
5. You should feel fatigue on the back of the upper arm you are working.
Shoulder Horizontal Abduction

_Aim of the exercise_
This exercise aims to increase the strength in different areas of your shoulder and upper arm, to provide you with more overall strength in the upper body.

_Exercise instructions_
1. Loop the band around your thigh and hold the end in your opposite hand, with your arm resting by your side.
2. Slowly pull your arm out to the side, moving away from your body.
3. Try to keep your shoulders down.
4. Slowly return to the starting position, without allowing the band to ‘snap’ you back into position. Control the resistance.

Seated Row

_Aim of the exercises_
These exercises are designed to strengthen the shoulder joint and your upper back muscles in three different planes of movement — this assists in improving your posture.

_Neutral Grip_

_Exercise instructions_
1. Loop the resistance band securely around the bottom of your foot.
2. Hold the band in your fist, with your thumb pointing to the roof.
3. Squeeze your shoulder blades together as you bring your elbow back to meet your side.
4. Slowly release the tension and return to the starting position. Try not to shrug your shoulders during this movement.
5. You should feel fatigue between your shoulder blades and in your arms.
Aim of the exercise
This exercise aims to increase the strength of your bicep muscle at the front of your upper arm. This assists you in picking up heavy objects, carrying things, and completing a variety of tasks that require arm strength.

Exercise instructions
1. Loop the band around your foot. Try to keep your leg straight; however, if the resistance band is too tight, you can bend your knee to release some of the tension.
2. Keep your elbow in a fixed position by your side.
3. Face your palm/fist towards the roof.
4. Bend your elbow as you lift your palm towards your shoulder.
5. Slowly relax the tension and return your palm to the starting position.
6. You should feel fatigue in the front of your upper arm.

Supine Grip
1. Repeat steps 1-6 above; however, change your hand position so your palm points towards the roof.

Prone Grip
1. Repeat steps 1-6 above; however, change your hand position so your palm points towards the floor/bed.
2. In addition, instead of pulling your elbow into your side, pull your elbow backwards until it is in line with your shoulder. For this exercise, it’s okay to end with your elbow away from the side of your body.
Leg Curl

Aim of the exercise
This exercise aims to increase the strength in the back of your thighs and front of your hips. It helps to correct your posture and assists in improving your walking patterns. This will, in turn, assist in completing whole-body exercises outside of dialysis (such as walking or bike riding).

Exercise instructions
1. Make a figure 8 with the band.
2. Loop one foot through the first hole, and the other foot through the second hole.
3. Keep one leg straight.
4. With the other leg, bend your knee by sliding your heel backwards/up towards your buttocks.
5. Slowly return your foot back to the starting position.
6. You should feel fatigue in the back of your upper thigh; however, you may also feel it in your hips and the front of your lower leg. These extra fatigue feelings are okay, as long as they’re not painful.

Calf Press

Aim of the exercises
These exercises aim to strengthen the calf muscles in two different ways. This assists in correct walking technique and balance.

Straight Knee
Exercise instructions
1. Loop the band around the top half of your foot (that is, the ball of your foot). Make sure the band isn’t going to slip off the top of your foot.
2. Hold the band tightly. Your hand should not move during the exercise.
3. Keep your leg straight and the band tight, pointing your toes away from your body.
4. Slowly relax your toe back to the starting position.
5. You should feel fatigue on the back of your lower leg.
Bent Knee

1. Repeat steps 1-5 above; however, instead of keeping your leg straight, bend your knee to a 45-degree position. Rest your heel on the bed, and point your toes forward as above.

2. You should feel fatigue in a slightly deeper position on the back of your lower leg.

Leg Press

**Aim of the exercise**

This exercise aims to strengthen the muscles on the top of your thigh. This assists in your ability to walk up the stairs, get up from chairs, and to improve your walking ability.

**Exercise instructions**

1. Loop the band around your foot, and bend your leg to 45 degrees at the knee.

2. Hold your hand tight so there is a small amount of tension in the bent position.

3. Slowly push your foot forward, pushing out against the tension.

4. Relax slowly by dragging your heel back to the starting position.

5. You should feel fatigue on the top of your upper leg/thigh.
Hip Abductions

**Aim of the exercise**
This exercise aims to increase the muscles on the sides of your legs. This helps with hip stability, sideways balance and improved walking ability.

**Exercise instructions**
1. Loop the band around your knees and hold the ends to secure the loop.
2. Open your legs in a scissor motion (your legs should move outwards).
3. Return to the starting position by bringing your knees together again.
4. You should feel fatigue on the outside of your upper thighs.

Straight Leg Raise

**Aim of the exercise**
This exercise assists in improving your abdominal strength and, therefore, your posture. It will also increase the strength at the front of your hips for improved lower body movements.

**Exercise instructions**
1. You do not need the resistance band for this exercise.
2. Lean the chair back slightly.
3. Lift one leg off the chair, keeping the leg straight.
4. Return your leg to the bed in a slow and controlled manner.
5. You should feel fatigue in the front of your hip and along your leg.
**ABC Drawing With Toes**

**Aim of the exercise**
This exercise helps to increase the strength and mobility at your ankle, which helps in balance and walking.

**Exercise instructions**
1. If you are able to, lift your leg slightly off the chair. If it is too difficult to keep your leg up, you may keep it resting on the bed.
2. Use your toes as a pencil. Draw the letter A in the air, followed by B and C. Continue this until you get to Z. Switch your legs and repeat.

**Abdominal Leg Extensions**

**Aim of the exercise**
This exercise helps to increase your abdominal strength and core stability.

**Exercise instructions**
1. Recline your bed as much as you can without your heart dropping below the level of your fistula.
2. If you can, lift both your feet off the bed and bend your knees at 90 degrees. If this is too hard, you can keep one leg on the bed.
3. Slowly extend one leg outwards with your foot in the air, then return it to the starting position.
4. Alternate your legs for each repetition, unless you are keeping one leg on the bed. In this case, complete a whole set before changing legs.
5. You should feel fatigue in your abdomen.
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Where to find more information

Kidney Health Australia
www.kidney.org.au
Kidney Health Information service (Freecall) 1800 454 363

Exercise Sports Science Australia (ESSA)
www.essa.org.au
(07) 3862 4122