



Strength and conditioning exercise class

Welcome to the strength and conditioning exercises class where you will work with a physiotherapist to improve your mobility and condition following surgery or illness. The training was developed to help athletes with their performance but the resulting improvements in function and strength can help you with everyday activities of daily living. If there is anything you do not understand please ask your physiotherapist.

The role of strength and conditioning training in rehabilitation

Strength and conditioning is the physical and physiological development of athletes for sport performance. The role of strength and conditioning is to bridge the gap between training theory and the actual training. This helps sports people to become faster, stronger and more flexible. Strength and conditioning involves a holistic approach to the development of the athlete and their performance. A strength and conditioning class emphasises constantly varied, high intensity functional movements.

Functional strength and conditioning training attempts to adapt or develop exercises which allow individuals to perform the activities of daily life like lifting, holding, pushing, pulling, throwing, running, walking and reaching more easily without pain, stiffness, restriction or causing injuries. Functional strength is the ability to load your joints (spine, shoulders, hips, knees and ankles) through a full range of motion with strength, endurance, coordination, power, speed and agility. These exercises work cardiovascular endurance, stamina, strength, flexibility, power, speed, coordination, agility, balance and accuracy whilst maximising performance and fitness for any physical challenge or activity.

Strength and conditioning training also increases muscular endurance which helps with injury prevention and can contribute to increased performance. It has been shown in research that 80% of injuries occur in the last half of the game, with 50% occurring in the last quarter of the game; increasing muscular endurance is therefore imperative. By allowing sports people to become stronger and have more endurance ability this can lead to them becoming more resilient to injuries. The better the muscle functions and the less muscle imbalance there is, the less the stress placed on ligaments and tendons.

What are the benefits of strength and conditioning training?

After many injuries or surgeries to the hip, knee, ankle or shoulder the rehabilitation is lengthy and many people find it difficult to achieve their final goals. Interest in rehabilitation once discharged from physiotherapy can be easily lost. Evidence shows that working together in a group promotes camaraderie, with everyone giving support and encouragement to each other. Exercising in this environment has also been shown to encourage people to continue with the exercises covered on their own.

The exercises in our strength and conditioning classes aim to improve your everyday performance by increasing your:

- **Strength:** the ability to lift a load.
- **Muscle size:** the cross sectional area of the muscle.
- **Muscle endurance:** the ability to perform the activity repetitively and easily.
- **Power, speed and agility:** the ability to move your own body weight quickly and deliberately and to change direction with speed and accuracy.
- **Cardiovascular endurance:** using both arms and legs together for short bursts creates a high intensity component to the class that will increase your heart rate, pump the blood around your system and improve your stamina.
- **Range of movement:** stretching the large muscle groups is a vital component to each class, along with working the joints through their full range of movement.
- **Balance and co-ordination:** practicing your balance, such as standing on one leg, or moving with your eyes closed, and maintaining strong muscles through weight training is a critical element in preventing pain.


What equipment will I need to do the exercises?





The classes use hand weights, resistance bands, balls, steps and your own body weight to further challenge and build your strength and condition. All the equipment used is available at local sports shops or via the internet.

The exercises

The following exercises are examples of the exercises that you will have completed over the six weeks of the strength and conditioning course. They include a variety of balance, core, general strengthening, explosive and non-explosive exercises. A selection of these exercises (from each section) can be completed up to 3-4 times a week with adequate rest days between i.e. if you train two consecutive days then have a rest day the following day to allow your muscles to recover. You could also include general running, skipping, change of direction and hopping work in your programme.

Balance exercises

	<p><u>Y balance</u></p> <ul style="list-style-type: none">• Place three objects on the floor in a "Y" shape.• Stand on one leg in the centre of the "Y" shape.• With the stance knee slightly bent and maintained over the centre of your foot, slowly push the objects out and in as far as possible (maintaining control) with the other leg.• Repeat for all arms of the "Y", before repeating on the other leg.
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	<p><u>Variation</u></p> <ul style="list-style-type: none"> • To make harder, vary the amount of knee bend on the stance leg.
	<p><u>Bridging on wobble cushion</u></p> <ul style="list-style-type: none"> • Lie flat on your back arms out to the side and palms facing down. • Bend your knees to approximately 45 degrees and place a wobble cushion or BOSU under your feet. • Initially start with both feet on the wobble cushion / BOSU and progress to one foot. • Squeeze your bottom muscles and hamstrings and raise your hips to make a straight line between your shoulders and hips (do not arch your back). • Hold for 10 seconds and slowly lower yourself back to the ground. • Repeat.
	<p><u>Tight rope balance beam walk</u></p> <ul style="list-style-type: none"> • Walk along an upturned bench/beam with one foot in front of the other. • Try to keep heel to toe throughout. <p><u>Variation</u></p> <ul style="list-style-type: none"> • Walk backwards to test balance.
	<p><u>Balance beam sideways walking</u></p> <ul style="list-style-type: none"> • Standing on a balance beam / upturned bench. • Bend knees into squat position. • Maintain knee alignment and side step along bench in squat position. • Keep back straight.



Single leg dip on bench

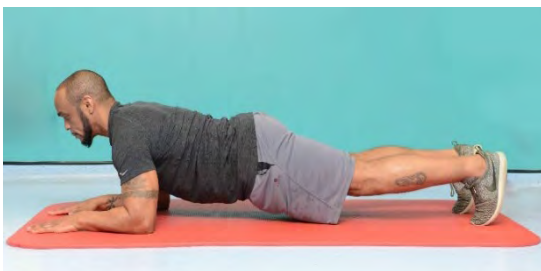
- Walk forwards along bench.
- Slowly dip one leg down to the side.
- Make sure hips remain even and the standing knee doesn't turn inwards.
- Repeat on opposite leg.



Single leg deadlift on wobble cushion

- Stand on your right leg with a dumbbell / kettle bell in your left hand.
- Stand on a wobble cushion.
- Bend your right hip and knee and bend forwards to touch the weight to the floor slowly.
- Squeeze your gluteal (bottom) muscles to return to start position.
- Repeat on the other side.

Core stability



Plank

- Lie face down, with your elbows and toes taking your weight (elbows under shoulders). Keep your ankles, hips and shoulders in line.
- Maintain your back, head and body in a straight, neutral position.
- Squeeze your gluteal (bottom) muscles and tighten your abdominal muscles to stop your hips from sagging.
- Brace your shoulders.
- Maintain your position.

	<p><u>Plank with arm slides</u></p> <ul style="list-style-type: none">• Lie face down, with your elbows and toes taking your weight (elbows under shoulders). Keep your ankles, hips and shoulders in line.• Maintain your back, head and body in a straight, neutral position.• Squeeze your gluteal (bottom) muscles and tighten your abdominal muscles to stop your hips from sagging.• Brace your shoulders.• Maintain your position.• Move objects placed in front of you.
	<p><u>Plank with leg lift</u></p> <ul style="list-style-type: none">• Lie face down, with your elbows and toes taking your weight (elbows under shoulders). Keep your ankles, hips and shoulders in line.• Maintain your back, head and body in a straight, neutral position.• Squeeze your gluteal (bottom) muscles and tighten your abdominal muscles to stop your hips from sagging.• Brace your shoulders.• Maintain your position.• Lift 1 leg at a time. Hold and repeat with other leg.
	<p><u>Side planks with bent legs</u></p> <ul style="list-style-type: none">• Lie on your side, resting on knees and elbow.• Support yourself on your elbow, keeping it in line below the shoulder, and place your free hand on your hip.• Balance on your forearm, squeeze your gluteal (bottom) muscles and squeeze your abdominal muscles.• Do not allow your hips to sag towards the floor.



Side planks legs straight

- Lie on your side, legs straight, feet stacked one on top of the other.
- Support yourself on your elbow, keeping it in line below the shoulder, and place your free hand on your hip.
- Balance on your forearm, squeeze your gluteal (bottom) muscles and squeeze your abdominal muscles.
- Do not allow your hips to sag towards the floor.



Side planks with leg raise

- Lie on your side, legs straight, feet stacked one on top of the other.
- Support yourself on your elbow, keeping it in line below the shoulder, and place your free hand on your hip.
- Balance on your forearm, squeeze your gluteal (bottom) muscles and squeeze your abdominal muscles.
- Do not allow your hips to sag towards the floor.
- Lift top leg up.



Variation



To make harder, place the hand of your supporting arm on the floor and straighten your arm so you are holding the position at arm's length.




Bridging

- Lie flat on your back with arms across your chest.
- Bend your knees to approximately 45° and place your heels on the floor.
- Squeeze your bottom muscles and hamstrings and raise your hips to make a straight line between your shoulders and hips (do not arch your back).
- Hold for 10 seconds and slowly lower yourself back to the ground.
- Repeat.

	<p><u>Bridging with theraband</u></p> <ul style="list-style-type: none">• Lie flat on your back arms out to the side and palms facing down.• Bend your knees to approximately 45° and place your heels on the floor.• Place a resistance band around your thighs and push your thighs out against the band as you lift your bottom up.• Squeeze your bottom muscles and hamstrings and raise hips to make a straight line between your shoulders and hips (do not arch back).• Hold for 10 seconds and slowly lower yourself back to the ground.• Repeat.
	<p><u>Bridging one leg</u></p> <ul style="list-style-type: none">• Lie flat on your back arms with your arms crossed across your chest.• Bend your knees to approximately 45 degrees and place your heels on the floor.• Lift one leg off the floor to make a straight line.• Squeeze bottom muscles and hamstrings and raise your hips to make a straight line between your shoulders and hips (do not arch back).• Hold for 10 seconds and slowly lower yourself back to the ground.• Repeat with other leg off floor.
	<p><u>Donkey kicks</u></p> <ul style="list-style-type: none">• On hands and knees, bend left knee to 90 degrees squeeze bottom muscles and push foot towards ceiling.• Repeat on right leg.• Ensure that back stays flat throughout.• Ensure hips don't twist during movement.
	<p><u>Superman</u></p> <ul style="list-style-type: none">• Get into a 4 point kneeling position.• Lift your right arm and left leg up until they are parallel to floor.• Hold for 3-5 seconds before returning to the starting position.• Repeat on opposite side.

	<p><u>Bird dog</u></p> <ul style="list-style-type: none">• Get into a 4 point kneeling position with knees off the ground.• Lift your right arm and left leg up until they are parallel to floor.• Lift right knee a couple of inches off the floor.• Hold for 3-5 seconds before returning to the starting position.• -Repeat on opposite side.
	<p><u>Dead bug</u></p> <ul style="list-style-type: none">• Lying on your back, engage core muscles.• Lift both arms and legs (knees bent) to make 90 degree angle.• Slowly lower down opposite arm and leg.• Return to start position and repeat with other side.

Generalised strengthening exercises

	<p><u>Bent over row</u></p> <ul style="list-style-type: none">• Stand with your feet hip width apart and your knees slightly bent. Bend your torso over to at least 45 degree angle (maintaining a flat lower back).• Hold the dumbbell / barbell with your thumbs facing the outside of your thighs.• Row the dumbbells / barbell to your ribcage and then lower back to the starting position.• Maintain a good posture throughout.
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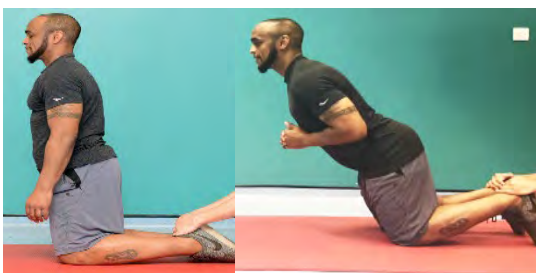
Good mornings

- Stand with your feet approximately shoulder width apart and knees slightly bent, feet facing forwards.
- Place a bar behind your neck or your hands behind your head and keep your back straight. Bend forwards at the hips towards the floor.
- Squeeze your bottom muscles and straighten your hips to return to an upright position.
- NB: Keep your back flat and your knees slightly bent throughout the exercise.



Press ups

- Lying on your front with your arms slightly wider than your hips support your body weight by straightening your arms.
- Your body should be in a straight line balanced on your hands and feet.
- Engage core muscles and lower yourself towards the ground with elbows tucked into your body.




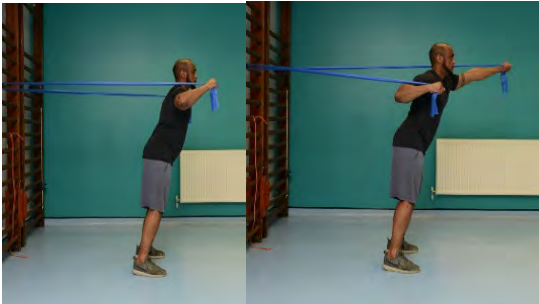

Nordic hamstrings

- When kneeling, get someone to hold onto your ankles or if you are alone, wedge your feet under something that is not going to move.
- Slowly lower yourself to the floor for as long as you can.
- You will end up in a press up type position as your hamstrings give up.
- Push yourself up to the start position and repeat.




Band rotations

- Safely secure a long loop of resistance band at shoulder height.
- Stand sideways to the wall, with hips and knees slightly bent.
- Take a firm hold of the resistance band, keep elbows straight.

	<ul style="list-style-type: none"> • Keeping arms straight, rotate upper body away from the wall. • Keeping arms straight return to the start position. • NB: Try to keep your hips fixed and facing forwards. Movement should come from your core musculature.
	<p><u>Resistance band chest press / push and pull</u></p> <ul style="list-style-type: none"> • Stand in a with feet hips width apart or in a lunge position with the front knee slightly bent and the band behind you. • Lean into the resistance of the band. The band should be in line with your chest. • Push one arm out in front of you whilst keeping the other elbow bent and in line with your body. • Repeat with the other arm.
	<p><u>Shoulder shuffles</u></p> <ul style="list-style-type: none"> • Place resistance band in a loop around your wrists. • Get into a press up position. • Take small steps, moving each hand forwards and sideways in a random pattern. • Try to maintain tension in the band at all times.

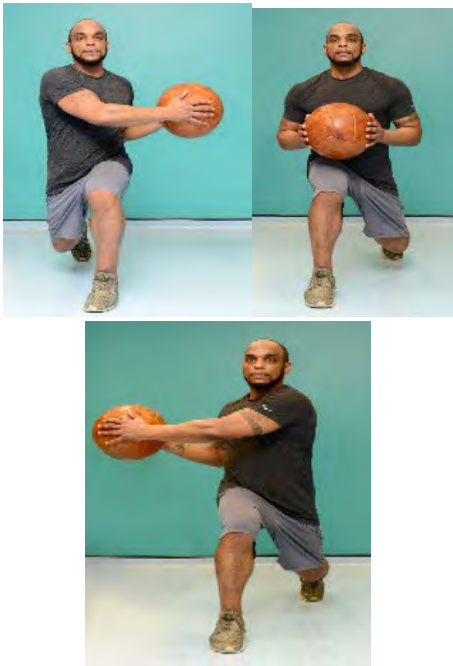
Dynamic strengthening exercises (non-explosive)

	<p><u>Lunges with medicine ball press</u></p> <ul style="list-style-type: none"> • Stand with your feet hips width apart and feet facing forwards. • Hold a medicine ball at chest height • Step into a lunge position aiming for a 90 degree angle at front knee. • Do not allow your back knee to touch the floor and do not bend at the waist. • Lunge forwards, taking medicine ball up and over head. • As return to starting position, press medicine ball above head.
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Lunges with dumb bells

- Stand with your feet approximately shoulder width apart and feet pointing forwards.
- Hold a dumb bell in each hand with arms by your sides.
- Step into a lunge position, aiming for a 90 degree angle at the front knee.
- Do not allow your back knee to touch the floor and do not bend at the waist.
- Return to start position and repeat on other leg.



Lunges with medicine ball twists

- Stand with your feet approximately shoulder width apart and feet pointing forwards.
- Hold a medicine ball in front of you at chest height.
- Step into a lunge position, aiming for a 90 degree angle at the front knee.
- Do not allow your back knee to touch the floor and do not bend at the waist.
- Twist towards front leg.
- Return to the start position and repeat on other leg.



Lunges with kettle bell figure of 8

- Stand with your feet approximately shoulder width apart and feet pointing forwards.
- Step into a lunge position, aiming for a 90 degree angle at the front knee
- Do not allow your back knee to touch the floor and do not bend at the waist.
- Pass kettle bell in figure of eight around the front leg.
- Return to the start position and repeat on other leg.



Squats

- Stand with your feet approximately shoulder width apart, with your knees either pointing forwards or in a “10 to 2” position.
- Bend your hips and knees and lower your body until your thighs are parallel to the floor.
- Squeeze your bottom muscles and straighten your hips to return to an upright position.
- NB: Keep your back flat and chest up and out throughout the exercise.



Squat and press

- Stand with your feet approximately shoulder width apart, with your knees either pointing forwards or in a “10 to 2” position.
- Hold a weight (dumbbells / kettle bell / medicine ball) at shoulder height.
- Drop into a squat and then drive back up, squeezing your gluteal (bottom) muscles.
- Press the weight overhead as you drive up from the bottom of the squat.



TRX squat

- Stand with your feet approximately shoulder width apart, with your knees either. Pointing forwards or in a “10 to 2” position.
- With the band trapped securely at waist height, take up slack of the band and with arms straight, squat until your thighs are parallel with the floor.
- Ensure your weight is through your heels.
- Bend your hips and knees and lower your body until your thighs are parallel to the floor.
- Squeeze your bottom muscles and straighten your hips to return to an upright position.
- NB: Keep your back flat and chest up and out throughout the exercise.



Bulgarian split squat (Box split squat)

- Place one foot in front of the other with the rear foot placed firmly on top of a bench or box.
- Making sure your front foot stays firmly on the floor, squat as deep as possible.
- Keep your knee over the middle of your foot.
- Return to start position. Squeeze gluteal (bottom) muscles as doing this. Repeat on other side.



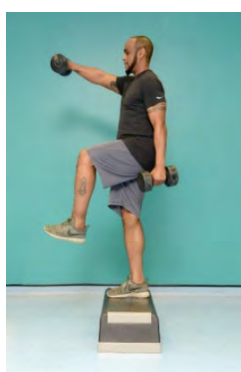
OR

Single arm

Double arms

Single leg deadlift

- Stand on your right leg with a dumbbell / kettle bell in your left hand.
- Bend your right hip and knee and bend forwards to touch the weight to the floor.
- Squeeze your gluteal (bottom) muscles to return to start position.
- Repeat on the other side.



Without weight

With weight



Same arm / leg

Step ups

- Holding a dumbbell / kettle bell in each hand. Place one foot on a step / box and start the movement by pushing through the heel to step up onto step / box.
- Keep your body upright throughout and do not cheat by pushing up on back leg.
- Finish the movement with the support leg locked and the free leg lifted so that your thigh is parallel to the floor.
- Return to starting position. Complete reps on all one side before repeating on opposite leg.

Variations

- Use a higher step with a lighter weight to promote power, control and mobility development.
- Use a lower step with a heavier weight to promote strength.



Single leg squat

- Stand with your feet hip width apart and arms by sides.
- Extend one leg out in front of you at about a 45 degree angle.
- Lower yourself down into a squat position (work to a range of movement that allows you to keep the correct knee alignment).
- You may bring your arms out in front of you to help with balance.
- Return to starting point and repeat on other leg.



Single leg squat off step

- Stand with your feet hip width apart and arms crossed across chest.
- Extend one leg out in front of you at about a 45° angle over edge of step.
- Lower yourself down into a squat position (work to a range of movement that allows you to keep the correct knee alignment).
- You may bring your arms out in front of you to help with balance.
- Return to starting point and repeat on other leg.



Single leg squat from chair

- Stand with your feet hip width apart and arms by sides.
- Extend one leg out in front of you at about a 45 degree angle.
- Lower yourself down into a squat position onto chair (work to a range of movement that allows you to keep the correct knee alignment).
- You may bring your arms out in front of you to help with balance.
- Stand using 1 leg maintaining knee alignment.
- Repeat.



Figure of eight dumb bell pass

- Squat with feet shoulder width apart.
- Maintain good knee alignment within the squat.
- Pass a dumb bell in a figure of 8 around the legs maintaining this position.
- Ensure keep back straight and core engaged.



Kettle bell swings

- Hold a kettle bell with both hands. Bend slightly at hips and knees.
- Bend forwards from the hips so that your forearms are in contact with your inner thighs.
- Swing the weight upwards and out in front of you, using the extension (straightening) of your hips to move the load.

Variation

- Hold the kettle bell in one hand and at the top of the movement, swop hands and return to the starting position.



Resisted hip movements against resistance band

- Stand with your feet hips width apart and a loop of resistance banding around your ankles.
- Raise one bent knee up straight in front of you by bending at your hip.
- Maintain a good straight back posture.
- Return to the starting position.
- Raise the same leg with knee bent out to side.
- Return to the starting position.
- Stretch the same leg back behind you.
- Return to the starting position.



Resistance band step and squat

- Drop into a bent hip and knee position with feet hip width apart and resistance band around ankles.
- Step sideways to the right and squat.
- Stand up on your right leg, keep left knee bent and take leg out to side.
- Return to start position and repeat on other side.

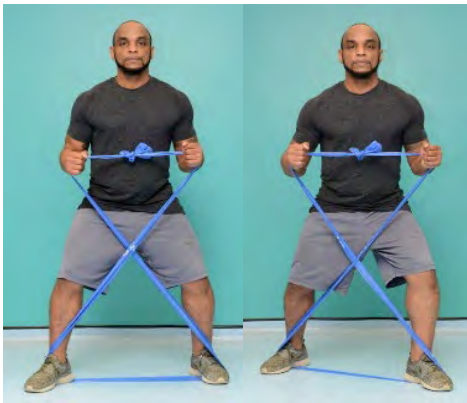


Crab walking with resistance band

- Loop a resistance band around your thighs.
- Drop into a bent hip and knee position.
- Leading with left leg step sideways.
- Bring right foot to left foot and repeat sequence.
- Repeat in opposite direction.

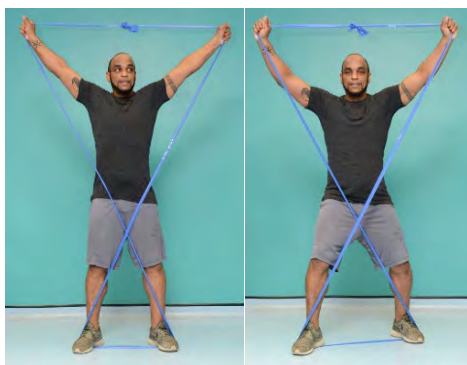
Variation

- Make it harder by placing band around ankles.



Small X band walks

- Place a resistance band loop underneath your feet and holding on the other end, cross the band in front of you.
- Holding onto band, raise your forearms so they are parallel to the floor. Turn your forearms out.
- Brace your shoulders back and down.
- Keeping this position, take small steps to the right.
- Repeat in other direction.



Big X band walks

- Place a resistance band loop underneath your feet and holding on the other end, cross the band in front of you.
- Raise your arms above your head in a “Y” position.
- Keeping this position, take small steps to the right.
- Repeat in other direction.

Dynamic strengthening exercises (explosive)



Mountain climbers

- Start in a push up position, lift one knee up to chest (so you are balancing on both hands and one leg).
- Immediately swop position of your legs by driving the first leg back to the starting position while bringing the opposite leg up to your chest).
- Repeat.



Burpees

- Start in standing with your hands by your sides.
- Squat down and place your hands on the floor.
- Drive your legs out behind you until you are in the same position as a press up.
- Immediately jump your legs back up to the starting position.
- Jump up in the air. Repeat from start position.



Lateral straddle jumps onto step

- Stand with feet either side of a step / box.
- Jump up onto the top of the step / box.
- Ensure the landing is symmetrical, with knees over the centre of your feet.

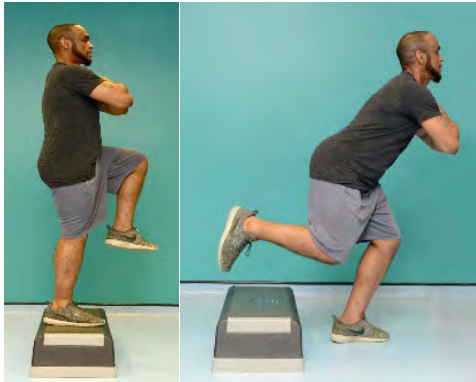


Jump from step with double footed landing

- Stand on top of a step box with feet slightly wider than hips width.
- Jump down onto the floor in front of the step.
- Ensure the landing is symmetrical, with knees over the centre of your feet.

Variation

- To make harder use higher step.
- This can also be performed as a sideways jump movement. Repeat on both sides.



Jump from step with single footed landing

- Stand on top of a step box with feet slightly wider than hips width.
- Hop down onto the floor in front of the step.
- Ensure that the knee of the landing leg remains over the centre of the landing foot.

Variation

- To make harder use higher step.
- This can also be performed as a sideways hop movement. Repeat on both sides.



Hop from step to double foot landing

- Stand on one leg on top of a step / box with knee slightly bent.
- Hop off the step / box and land on two feet.
- Ensure the landing is symmetrical, with knees over the centre of your feet.
- Repeat on other leg.

Variation

- To make harder use higher step.
- This can also be performed as a sideways jump movement. Repeat on both sides.





Hop from step to single foot landing

- Stand on one leg on top of a step / box with knee slightly bent.
- Hop off the step / box and land on one foot.
- Ensure that the knee of the landing leg remains over the centre of the landing foot.
- Repeat on other leg.

Variation

- To make harder use higher step.
- This can also be performed as a sideways hop movement. Repeat on both sides.

	<p><u>Running against resistance / lateral bounds</u></p> <ul style="list-style-type: none">• Safely secure a long loop of resistance band at hip height.• Step inside the loop so that the band is around the front of your pelvis.• Run forwards against the band until strong resistance is felt.• Maintain this position. <p><u>Variation</u></p> <ul style="list-style-type: none">• From this position, get into a half squat position.• Jump one foot out to side.• Bound from side to side, maintaining the tension on the resistance band
	<p><u>Hop on / off trampette</u></p> <ul style="list-style-type: none">• Stand on one leg with knee slightly bent and centred over the middle of your foot.• Hop onto the trampette.• Ensure that the knee of the landing leg remains over the centre of the landing foot.• Hop off trampette onto floor.• Ensure that the knee of the landing leg remains over the centre of the landing foot.

Summary

It is important that once you are discharged from physiotherapy that you continue to work hard at maintaining your strength and conditioning. This is especially important when there is a time lapse between when you finish your formal physiotherapy and the time you are given the all clear to return to your sport by your surgeon (this can be many months). Hopefully this booklet will give you some ideas of the types of exercises that you can continue to practice on a regular basis to help you reach your ultimate goal of returning to sport.

There are many local gyms that now provide strength and conditioning programmes which you could also attend if you need further guidance or motivation.

Acknowledgements

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Contacting us

Royal Berkshire NHS Foundation Trust Physiotherapy Department

Royal Berkshire Hospital, London Road, Reading RG1 5AN

Telephone Number: **0118 322 7812**

To find out more about our Trust visit www.royalberkshire.nhs.uk

Please ask if you need this information in another language or format.

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