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**REHABILITATION  
MANUAL FOR  
OSSGROW®**

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## INTRODUCTION

- After an injury or surgery, a rehabilitation manual will help patient return to daily activities and enjoy a more active, healthy lifestyle. Following a well structured rehabilitation manual will also help patient return to sports and other recreational activities.
- This is a general rehabilitation manual that provides a wide range of exercises.
- To ensure that the manual is safe and effective for you, it should be performed under doctor's supervision.
- This manual should be continued for 4 to 6 weeks, unless otherwise specified by your doctor or physical therapist.
- After recovery, these exercises can be continued as a maintenance program for lifelong protection and health of hips and thighs.
- Perform these exercises 2 to 3 days a week will maintain strength and range of motion in hips and thighs.



## REHABILITATION PLAN

- Discuss with your Orthopedic surgeon before beginning weight bearing on the operated leg and the walking aid to be used for walking.
- Complete bed rest for a week, except for washroom.
- Perform Foot Flat weight bearing for 4 weeks.
- Let the foot of your affected leg touch the floor to keep you balanced. Don't put any extra weight on your affected leg when it touches the floor.



### RANGE OF MOTION

Passive ROM in patients pain free range.

### FLEXION

Limited to: 90 degrees x 2 weeks (may go higher in the CPM)

### EXTENSION

Limited to: 0 degrees x 3 weeks

### ABDUCTION

Limited to: 30 degrees for 2 weeks

### PRECAUTIONS

- NO Active lifting of the surgical leg (use a family member/care taker for assistance/utilization of the non-operative leg) for approximately 4 weeks
- NO sitting greater than 30 minutes at a time for the first 3 weeks
- DO NOT push through pain

## Phase 1 | 0 to 4 weeks

### STATIONARY BIKE

No resistance, 20 minutes daily, increase time after 2 weeks as patient tolerates.

### CONTINUOUS PASSIVE MOTION (CPM)

4 hours per day, decrease to 3 hours if stationary bike is used.

### ANKLE PUMPS

- Flexion-extension at ankle joint, helps with circulation in your legs and prevent blood clots. Can be done in lying and sitting position. 40-50 reps at 2 hours interval.
- Move ankle up and down like a gas pedal.



### ISOMETRICS

**Quadriceps Sets:** Take a towel roll under knee joint, and push your knee down into the towel roll, hold it in that position for 5 seconds, then relax. Really focus on squeezing your quads while doing this activation exercise. 10 reps every 2-3 hours can be done with adequate rest and pain-free range and movement.



### GLUTEAL SETS

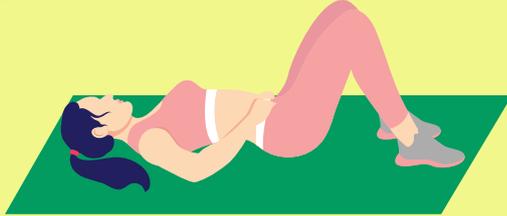
- Lie on your back with your knees bent in a 10 to 15-degree angle.
- Squeeze your buttock muscles together.
- Hold for five seconds. A set of 10-15 reps can be done 3 times a day. Do not hold breath.



### TRANSVERSUS ABDOMINIS ACTIVATION

Basic Abdominal draw-in maneuver. Lay on your back, with knees bent and feet flat on the floor. Place your fingers on the muscles just below your belly button then contract those muscles by pulling them down and away from your fingers. ie pull the belly-button down toward the floor without holding your breath during this movement. Keep your upper-abdominal muscles, back muscles, and hip muscles relaxed. Hold this

position for 5 seconds making sure you continue to breathe. The point of this direct transverse abdominis exercise is to fire the transverse abdominis without firing the rectus abdominis muscle.



## BRIDGING

Lie on your back with the knees bent and feet flat on the surface; push down on your feet as you tighten the buttocks and hamstring muscles and lift the hips from the surface.

Concentrate on pushing equally through both feet. Hold for a count of five, then return to start position. Perform 5- 10 reps twice a day.



## HEEL SLIDES



- Lie on back, slide heel towards bottom.
- Precaution: Do not bend hip beyond 90 degrees.

## TERMINAL KNEE EXTENSION

Lie on the back, towel roll under thigh. Lift foot, straightening knee. Do not raise thigh off roll.



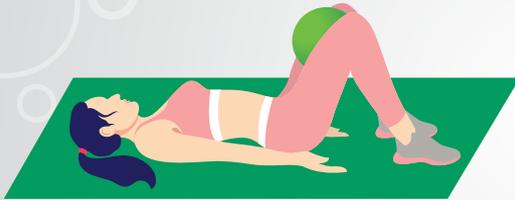
Diaphragmatic breathing exercise daily for 10 minutes three times a day.

Soft tissue mobilization daily especially for adductors, TFL, Iliopsoas, for 25 - 30 minutes per session.

## Phase 2 | 5 to 7 weeks

PROGRESS weight bearing on surgical leg using walking aid under the guidance and supervision of healthcare professional. Progress to advanced exercises, when your doctor gives thumbs up.

### BALL SQUEEZE WITH ABDOMINAL CONTRACTION



### STEP UP : FORWARD AND LATERAL (SIDE )



### HAMSTRING CURL/QUAD STRETCH

Lie on your stomach with legs extended and strap on the foot.

Keeping your thigh on the bed, bend your knee until you feel a slight stretch in the front of the thigh.

As tolerated, gently pull the foot further. Hold for 30 seconds. Repeat two times.



### BRIDGING PROGRESSION WITH BALL :



## PRONE HIP EXTENSION



## CLAMS AND REVERSE CLAMS



- Without resistance.
- Lie on the non operated side.

## Phase 3 | Week 8 onwards

Focus on more  
FUNCTIONAL  
exercises in all  
planes

Advance  
exercises only as  
patient exhibits  
good control  
(proximally & distally)  
with previous  
exercises

Return to  
pre injury level.  
Focus on more  
Functional  
exercise  
in all planes.

## GOALS

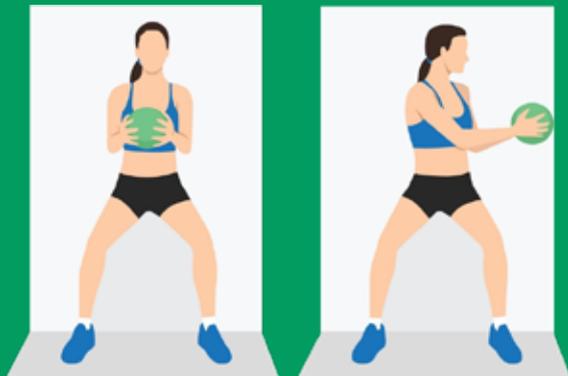
## LUNGES

Forward , Lateral , Split Squats



## SINGLE LEG BALANCE ACTIVITIES

Balance, Squat, Trunk Rotation



## SINGLE LEG BRIDGES



## Phase 4

Return to normal routine activity.

## GOALS

## REHABILITATION PLAN

It typically takes 4-6 months to return to sport, possible 1 year for maximal recovery

Assess functional strength and obtain proximal control prior to advancement of phase 4

## ACTIVITIES

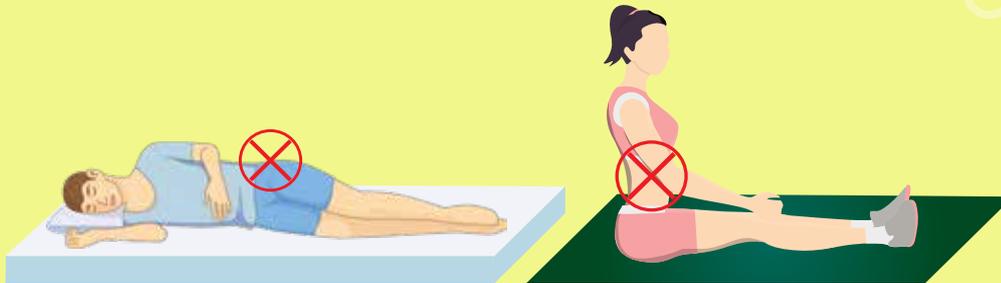
Treadmill, planks, Agility drills ( if painfree ), swimming, plyometrics, return to sport specifics.

Please refer to specific running and functional progression protocols.



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- To ensure that the manual is safe and effective for you, it should be performed under doctor's supervision.
- This manual should be continued for 4 to 6 weeks, unless otherwise specified by your doctor or physical therapist.
- After recovery, these exercises can be continued as a maintenance program for lifelong protection and health of hips and thighs.
- Perform these exercises 2 to 3 days a week will maintain strength and range of motion in hips and thighs.





## REHABILITATION PLAN

### WEIGHT BEARING

Non-weight bearing.

### RANGE OF MOTION

Passive and active Range of Motion activity till 90-degree flexion/ extension and rotation of hip.

### STRENGTHENING PROGRAM

Ankle pumps, quadriceps sets, gluteal sets exercise

### ACTIVITIES

Complete bed rest



## Phase 1 | 0 to 1 week Post-Operative

## PRECAUTIONS

- Non weight bearing...Absolutely on bed everything including bedpan activities.
- Do not let your knee or ankle cross the midline of your body.
- Avoid crossing your legs including when you are lying down or when turning while walking.
- Avoid hip flexion more than 90 degree such as sitting in low chairs, bending down to tie shoes.
- You must sit upright for at least an hour but not more than 2 hours at a stretch.
- Don't rotate towards your post-surgical hip; avoid turning your hip inwards.
- Prevention of pressure ulcers, specifically on heel through positioning or pressure relieving device.

## RANGE OF MOTION

- Passive and Active assisted ROM can be initiated, depending on patients condition as determined by the physical therapist ,under decreased weight and in pain-free range
- Hip flexion can be started up to 45 degrees
- Knee flexion and extension can also be initiated
- Isometric training of leg muscles

# STRENGTHENING PROGRAM

## ANKLE PUMPS

- Flexion extension at ankle joint , helps with circulation in your legs and prevent blood clots. Can be done in lying and sitting position. 40-50 reps at 2 hours interval.
- Move ankle up and down like a gas pedal.



## GLUTEAL SETS

To do glute sets, just follow these simple steps:

- Lie on your back with your knees bent in a 10 to 15-degree angle.
- Squeeze your buttock muscles together.
- Hold for five seconds. A set of 10 -15 reps can be done 3 times a day. Do not hold breath.



## QUADRICEPS SETS



Take a towel roll under knee joint, and push your knee down into the towel roll, hold it in that position for 5 seconds , then relax. Really focus on squeezing your quads while doing this activation exercise. 10 reps every 2-3 hours can be done with adequate rest and pain-free range and movement.

## ACTIVITIES

- Complete bed rest.
- No side lying, or long sitting for more than 2 hours at a stretch.
- Patient can also do breathing exercises/ techniques such as nose stenosis, “sniffing inhalation , breathing control etc
- Active movement and strengthening of upper extremities, exercises should be performed independently once per hour as local endurance training.

## SIDE LYING



## LONG SITTING



Increase  
functional  
independence

Increase  
ROM &  
strength

## GOALS



## Phase 2 | 1 to 3 week Post-Operative

# REHABILITATION PLAN

### WEIGHT BEARING

Partial weight bearing with walker, restrict to toilet.

### RANGE OF MOTION

Hip abduction/ adduction, hip internal/ external rotation

Hip ROM (Active or Active assisted ROM)

### STRENGTHENING PROGRAM

Quadriceps sets in full knee extension, gluteal sets, towel squeeze etc.

### ACTIVITIES

Strictly walk with Walking Aid.

### INITIATION OF WEIGHTBEARING USING WALKING AIDS

During rehab you will start with walker but as you progress you will be moved from walker to crutches to cane.

## GOALS

- Assisted transfer in and out of bed.
- Assisted ambulation with walker.

## PRECAUTIONS

- Protected weight bearing on operated leg.
- Upper extremity strengthening.
- Weight bearing is advanced/ progressed, depending on stability.

## EXERCISES

**Ankle pumps:** Move ankle up and down like a gas pedal.

**Quads sets:** Lie on back, press knee down, tightening muscles in front of thigh. Increase Hold for a count of 10-12 seconds.

**Glute sets (Butt Squeezes):** Squeeze buttocks together, increase your hold count for 10-12 seconds. No holding breath.

**Heel slides:** Lie on back, slide heel towards bottom.

**Precaution:** Do not bend hip beyond 90 degrees.

## HIP ABDUCTION & ADDUCTION

Slide legs out to the side. Keep toes pointed up and knees straight.



**Caution:** Do not cross the midline when bringing the leg back in.

## TERMINAL KNEE EXTENSION

Lie on the back, towel roll under thigh. Lift foot, straightening knee. Do not raise thigh off roll.

Patients with hip joint problems frequently also suffer from incontinence.



## BRIDGING

Lie on your back with the knees bent and feet flat on the surface; push down on your feet as you tighten the buttocks and hamstring muscles and lift the hips from the surface.



Concentrate on pushing equally through both feet. Hold for a count of five, then return to start position. Perform two sets of 10 reps.

## TRANSFER EXERCISE

Supine -> sitting->standing via the side that underwent surgery.

Sit to stand and walking under supervision.

Compulsory  
X-ray at  
6 weeks.

Balance and  
proprioceptive  
training to assist  
with functional  
activities.

Increase lower  
extremity and  
trunk strength.

## GOALS



## Phase 3 | 3 to 6 week Post-Operative

# REHABILITATION PLAN

## WEIGHT BEARING

Increase weight bearing 50% body

## RANGE OF MOTION

Get Full ROM Especially external rotation  
in Hip flexion.

## STRENGTHENING PROGRAM

- Straight leg raises • Knee quadriceps
- Static squats.

## ACTIVITIES

- Sit to stand activities • Gait training.

To progress to Phase III, minimal pain with exercise. Surgeon allows progression based on x-ray. Strength of extension, adduction and core about 50%-75% of normal.

Progress all the above with increase in resistance time.

## EXERCISES

- Quadriceps & Hamstrings Stretch • Leg Raises
- Adduction • Extension

## STEP UP : FORWARD AND LATERAL (SIDE )



## BALL SQUEEZE WITH ABDOMINAL CONTRACTION



Begin light recreational activities.

Compulsory X-ray at 12 weeks

Return to all functional activities

Increase overall strength throughout lower extremities

## GOALS



## Phase 4 | 6 to 12 week Post-Operative

# REHABILITATION PLAN

## WEIGHT BEARING

Partial weight bearing 80% of body weight in bilateral case.

## RANGE OF MOTION

Progress trunk stabilization exercise, squat activities.

## STRENGTHENING PROGRAM

Progress balance and proprioception activities

## ACTIVITIES

Increase overall exercise and endurance training i.e. walking, swimming

These **ADVANCED EXERCISES**, should be started only after approval from your healthcare professional.



## WALL SLIDES (SQUATS)

With feet shoulder-width apart and back to wall, slide down wall. Return to upright position. Do not go past 90 degrees of hip flexion. Your therapist will guide you on how far to slide down the wall. Perform two sets of 10 reps.

**Hamstring Curl/Quad Stretch:** Lie on your stomach with legs extended and strap on the foot.

Keeping your thigh on the bed, bend your knee until you feel a slight stretch in the front of the thigh.

As tolerated, gently pull the foot further. Hold for 30 seconds. Repeat two times.

## STOMACH LYING



## STANDING MARCHES

Balance Practice Standing, holding on to the sink, slowly lift the leg that has been operated on, concentrating on your support leg balance. Balance/hold for 10 seconds. Repeat by standing on the operated leg, concentrating on your

balance.

At first, hold very lightly with your fingertips, then eventually progress to holding hands just above the sink.

Progress to doing with eyes closed. Perform 20 reps.



## QUADREPUD (HIP EXTENSION)



## BRIDGING PROGRESSION WITH BALL :



Aquatic therapy can also be started after discussion with your surgeon with precautions .

**Gait training in pool :** Shallow water walking – forward, backward , sideways, marching If you feel pain ,try basic modifications : • Move to slightly deeper water • Take smaller steps • Strap on your flotation belt

**Stretching :** in pool • Hamstring stretch • Quad stretch • Hip flexor stretch.

Return to  
normal routine  
activity.

## GOALS



## Phase 5 | 12th week onwards

# REHABILITATION PLAN

## WEIGHT BEARING

Full weight bearing exercise

## ACTIVITIES

Continue walking, swimming and biking programs for aerobic conditioning

Cycling

No impact exercises like running, jogging and climbing for 12 weeks

Anticipate return to work requiring labor at 12-16 weeks, use of treadmill and recreational sports at 16 weeks. Work on return to Pre-injury cardio ability.

Add initial lateral and general agility drills with good mechanics.

Side-step, add resistance as tolerated

Lateral step downs

Elliptical

Single leg mini squats

Lunges

Stepping patterns to prepare for initial lateral and general agility drills.

Walk Jog Run progression.

Swimming : Low -Medium – High Intensity drills , Water plyometrics.

Please refer to specific running and functional progression protocols.





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