

Box 1. Training periodization for weeks one and two of supervised lower limb muscle-strengthening exercises.

Weeks 1, 2 – Exercise two times a week		
Block 1		
Stationary walking- 30 sec		
	Repetitions	Intensity
Knee extensors		
Quads over a roll	2 sets of 5-8 isometric contractions (20 sec) with a 1-min interval.	RPE 5
Hip adductors		
Hip adduction in sitting	2 sets of 5-8 isometric contractions (20 sec) with a 1-min interval.	RPE 5
Plantar flexors		
Standing plantar-flexion (Level 1)	2 sets of 8-12 reps with a 1-min interval.	RPE 5
1 min between blocks		
Block 2		
Knee extensors		
Sitting knee extension (Level 1)	2 sets of 8-12 reps with a 1-min interval.	RPE 5
Hip abductors		
Wall Push (Level 1)	2 sets of 5-8 isometric contractions (20 sec) with a 1-min interval.	RPE 5
Knee flexors		
Standing knee flexion (Level 1)	2 sets of 8-12 reps with a 1-min interval.	RPE 5
Stationary walking - 30 sec		

RPE = Rating of Perceived Exertion.

Box 2. Training periodization for weeks three to seven of supervised lower limb muscle-strengthening exercises.

Weeks 3 to 7 – Exercise three times a week		
Block 1		
Stationary walking- 30 sec		
	Repetitions	Intensity
Knee extensors		
Sitting knee extension (Level 2)	3 sets of 8-12 reps with a 1-min interval.	RPE 5
Hip adductors		
Standing hip adduction (Level 1 – weeks 3 and 4) (Level 2 – weeks 5, 6, and 7)	3 sets of 8-12 reps with a 1-min interval.	RPE 5
Plantar flexors		
Standing plantar-flexion (Level 1 – weeks 3 and 4) (Level 2 – weeks 5, 6, and 7)	3 sets of 8-12 reps with a 1-min interval.	RPE 5
1 min between blocks		
Block 2		
Knee extensors		
Wall squats (Level 1 – weeks 3 and 4) (Level 2 – weeks 5, 6, and 7)	3 sets of 8-12 reps with a 1-min interval.	RPE 5
Hip abductors		
Wall Push (Level 1 – weeks 3 and 4) (Level 2 – weeks 5, 6, and 7)	3 sets of 5-8 isometric contractions (20 sec) with a 1-min interval.	RPE 5
Knee flexors		
Standing knee flexion (Level 1 – weeks 3 and 4) (Level 2 – weeks 5, 6, and 7)	3 sets of 8-12 reps with a 1-min interval.	RPE 5
Stationary walking - 30 sec		

RPE = Rating of Perceived Exertion.

Box 3. Training periodization for weeks eight to twelve of supervised lower limb muscle-strengthening exercises.

Weeks 3 to 7 – Exercise three times a week		
Block 1		
Stationary walking - 30 sec		
	Repetitions	Intensity
Knee extensors		
Knee extension in short arc (Level 1 – weeks 8 and 9) (Level 2 – weeks 10, 11, and 12)	3 sets of 8-12 reps with a 1-min interval.	RPE 7
Hip adductors		
Standing hip adduction (Level 2 – weeks 8 to 12)	3 sets of 8-12 reps with a 1-min interval.	RPE 7
Plantar flexors		
Standing plantar-flexion (Level 3 – weeks 8 to 12)	3 sets of 8-12 reps with a 1-min interval.	RPE 7
30 sec between blocks		
Block 2		
Knee extensors		
Chair stands (Level 1 – weeks 8 and 9) (Level 2 – weeks 10, 11, and 12)	3 sets of 8-12 reps with a 1-min interval.	RPE 7
Hip abductors		
Crab walking (Level 1 – weeks 8 and 9) (Level 2 – weeks 10, 11, and 12)	20-30 steps in each direction	RPE 7
Knee flexors		
Supine bridging (Level 1 – weeks 8 and 9) (Level 2 – weeks 10, 11, and 12)	3 sets of 8-12 reps with a 1-min interval.	RPE 7
Stationary walking - 30 sec		

RPE = Rating of Perceived Exertion.

Box 4. Exercise description, bearing, and progression.

	Exercise	Description	Bearing	Progression
Knee extensors	Quads over a roll	Patient sitting extends knees over a roll and maintains muscle contraction for 20 seconds.	Non-weight-bearing	Number of isometric contractions.
	Sitting knee extension	Patient sitting performs knee extension against resistance from an elastic band.	Non-weight-bearing	Level 1 – low-level elastic band. Level 2 – moderate-level elastic band.
	Sitting knee extension in a short arc	Patient sitting performs knee extension against resistance from an elastic band until 60° knee bend.	Non-weight-bearing	Level 1 – low-level elastic band. Level 2 – moderate-level elastic band.
	Wall squats	Patient standing, with their back to the wall, performs the squat movement until 30° knees bend.	Weight-bearing	Level 1 – squats with bilateral knee overload on the lower limbs. Level 2 – squats with bilateral overload on the lower limbs and emphasis over the most symptomatic knee.
	Chair stands	Patient sitting on a standard chair, with their feet parallel and hip-width apart, stands up from the chair without using their hands.	Weight-bearing	Level 1 – chair stands with bilateral knee overload on the lower limbs. Level 2 – chair stands with bilateral overload on the lower limbs and emphasis on the symptomatic knee.
Knee flexors	Standing knee flexion	Patient standing performs the knee flexion movement against resistance from an elastic band.	Non-weight-bearing	Level 1 – low-level elastic band. Level 2 – moderate-level elastic band.
	Supine bridging	Patient in the supine position, knees and hips flexed, upper limbs positioned laterally, performs the supine bridging.	Weight-bearing	Level 1 – Exercise with bilateral overload on the lower limbs. Level 2 – Exercise with unilateral overload on the lower limb, while contralateral lower limb with knee extension.
Hip adductors	Sitting hip adduction	Patient sitting, with a pillow between the knees, performs hip adduction.	Non-weight-bearing	Number of isometric contractions.
	Standing hip adduction	Patient standing performs the hip adduction movement against resistance from an elastic band.	Non-weight-bearing	Level 1 – low-level elastic band. Level 2 – moderate-level elastic band.

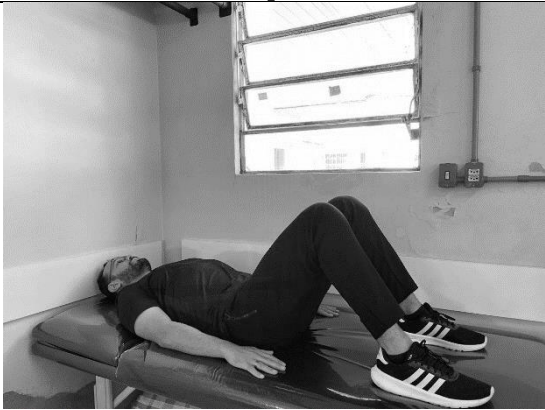
Hip abductors	Wall push	Patient standing sideways against the wall performs isometric activation of the abductors by pushing the lateral region of the thigh against the wall, while the other lower extremity is at 15 to 20° of knee flexion.	Weight-bearing	Level 1 – Exercise with the lower extremity resting on the ground at 15 to 20° of flexion. Level 2 – Exercise with the lower extremity resting on the ground in 45° flexion.
	Crab walking	Standing patient performs side steps against resistance from an elastic band.	Weight-bearing	Level 1 – 20 side steps against the resistance from a moderate elastic band. Level 2 – 30 side steps against the resistance from a moderate elastic band.
Plantar flexors	Standing plantar-flexion	Patient standing performs the plantar flexion movement	Weight-bearing	Level 1 – Bilateral plantar flexion Level 2 – Unilateral plantar flexion with the contralateral lower limb at 20° of knee flexion. Level 3 – Unilateral plantar flexion with the contralateral lower limb at 90° of knee flexion.

Box 5. Exercise illustration.

Exercise	Illustration	
	Initial position	Final position
Quads over a roll		
		

Knee extension in short arc	Initial position		Final position	
				
Wall squats	Initial position		Final position	
				

Chair stands	Initial position		Final position	
				
Standing knee flexion	Initial position		Final position	
				

Supine bridging	Initial position	Final position
		
Sitting hip adduction	Initial position	Final position
		
	Initial position	Final position

Standing hip adduction



Initial position

Final position

Wall push



Crab walking	Initial position	Final position
		
	Initial position	Final position

Standing plantar- flexion						
	Initial position			Final position		

Stationary walking

