وزارة الصحة
Ministry of Health

Rehabilitation Protocol for Amputation

"Lower Limb Amputation Rehabilitation Protocol"

"Upper Limb Amputation Rehabilitation Protocol"

Kingdom of Saudi Arabia

Ministry of Health

General Directorate of Medical Rehabilitation & Long-Term Care

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Rehabilitation Protocol for Amputation

Overview

Amputation is defined as surgical removal or loss of body part such as arms or limbs in part or full. One million limb amputations are reported globally each year. And as of 2017, 57.7 million people across the globe have been living with traumatic amputation. Approximately 185,000 amputations occur in United States each year according to the amputee coalition. As of April 2021, United States has over 2 million Americans living with amputation, and another 28 million at risk of surgical amputation due to underlying causes. Data from Stanford Healthcare shows 49% rise in total number of amputations during the time of COVID-19 pandemic, during March 2020 to February 2021. Loss of limb has a huge psychological impact on one's mental health, as if the person has lost a loved one. It is difficult to cope with loss of sensation and function from the amputated limb. It also changes your (patients) and other people's perception of your (patients) body image, which can lead to depression and anxiety as negative thoughts are very common. Psychological well-being of the patient is vital to a good rehabilitation process. Hence, it is the duty of a physiotherapist/ physical therapist to acknowledge patients' concerns with good knowledge of natural grieving process. Patient undergone amputation is at a higher risk of fall, especially when they try to get up from the bed or chair and they have forgotten about the absence of the limb. These falls can cause injury to the surgical site, leading to prolonged healing. To deal with the risk of fall, it is mandatory to place a walker beside the patient. This reminds the patient to use assistance for transfers. In order to that, this protocol has been established.

Recommendations

1- Patients should meet all rehabilitation criteria to progress to the next phase
2- Clinicians collaborate closely with the referring physician throughout the rehabilitation process.
3- Contact the referring physician, If the patient develops a fever, unresolving numbness/tingling, excessive drainage from the incision, uncontrolled pain or unexpected symptoms.[3]

Physical therapist should complete the following Arabic or English outcomes measures pre-treatment, every 30 days and before discharge from physical therapy.

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Lower Limb Amputation Rehabilitation Protocol

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Lower limb amputation protocol
Phase 1: post-operative stage (1 day after surgery)

Rehabilitation goal	-Reduce pain and edema. -Provide stump care. -Minimize complications. -Maintain muscle strength and ROM of proximal body. -Improve patient transfer, mobility and ADL. -Patient education and psychosocial support.
Intervention	-Pain management: • ES and desensitization exercises. -Reduce of edema: • Compression therapy (dressing and compression socks) and elevation. -Stump care: • Stump protection and shaping by bandaging and rigid dressing. • Prevent skin adhesion and scar formation: gentle soft tissue mobilization. -Prevent contracture and pressure sores: • Proximal limb PROM, stretching exercises, positioning and bed mobility. • Initiate a prone lying program to avoid hip contracture. -Strengthening and stability (Muscles included: hip muscles, knee extensors, rotator cuff, elbow extension, back and abdominal musculature): • Breathing exercises. • PROM and AAROM exercises of residual and contralateral limbs. • Initial strengthening exercises (Isometric exercises) for major muscle groups of UE and LE. • Initial trunk control exercises: bridging, pelvic tilt, static sitting balance exercises and weight shifting. • Supported standing. -Patient transfers and ADL: • Supine to sit. • Sit to stand. • Bed to chair. • Chair to toilet. • Chair to tub.

	-Patient education: • Pain and edema control. • About assistive device available. • Home modification.
Precaution	-High risk of fall increased post LE amputation: tect the amputated limb from external trauma. vide proper transfers education. me modification. -Do not place pillows under the residual limb, may it increase the chance of contracture. -High risk of DVT post LE amputation.
Progression criteria	-Residual limb incision closed and free of infection. -Sutures removed. -Patient transfers and ADL progressed. -Patient has been medically cleared for further rehabilitation.

Phase 2: pre-prosthetic phase (out-patient stage)

Rehabilitation goal	-Management of phantom pain. -Improve shape of stump. -Continue prevent of contracture formation. -Improve muscles strength and ROM. -Promote balance and mobility. -Restore of independent of ADL. -Prepare the patient for initial prosthesis fitting.
Intervention	-Phantom pain management: • Mirror therapy and desensitization exercises. -Stump shaping: • Bandaging – removable rigid dressing – shrinker. -Continue of contracture prevention: • Proper positioning and prone lying program. • Stretching exercises. • PNF technique. -Strengthening: • Initiate of cardiovascular and endurance program: upper body ergometry. • Continue strengthening exercises of all limbs muscles. • Advance to AROM of residual and contralateral limb. • Initiate both open and closed chain exercises. • Initiate of Progressive Resistance Exercises (PRE). -Balance and gait training: • Advance to dynamic balance and weight shifting exercises from sitting and standing. • Single leg balance exercises. • Initiate gait training with appropriate assistive device. -Improvement of independent ADL included: • Independent self-care component training: feeding, toileting, dressing and bathing. • Stair climbing. • Floor transfers. • Vehicle transfers.
Progression criteria	-Fitting of the initial prosthesis occurred.

Phase 3: post-prosthetic stage (within 5 days after receipt of the prosthesis)

Rehabilitation goals	-Enhancement of prosthetic wearing and utilization. -Continue contracture prevention and maximize ROM. -Improve balance and gait with prosthesis use. -Improve ADL with prosthesis use. -Provide continued psychosocial support. -Encourage patient to resume hobbies, sports, social activities and driving.
Interventions	-Prosthesis wearing and utilization: • Teach the patient donning /doffing of prosthesis. • Prosthesis wearing time gradually increased as patient tolerance. - Balance and proprioception: • Static and dynamic balance with weight shifting exercises from standing. • Challenged balance training: on soft surface, rocker board and step-ups. - Gait training: • Gait progresses gradually from PWB to FWB. • Mirror therapy to improve gait pattern. -Functional task with prosthesis use: • Obstacle crossing. • Getting in and out of a car. • Going up and down stairs, ramps and slopes. • Carrying an object while walking over uneven ground outdoors. • Changing speed and direction. • Picking up objects from the floor. • Opening and closing a door. • The use of public transport. • The use of escalators. • Higher level of sporting activities should be initiated. • Return to work as soon as possible.

Precaution	Post-prosthetic precautions: -Ongoing pain in the residual limb. -Skin breaks down. -Change in the ability to don or doff the prosthesis -Change in limb volume. -Change in pattern of usage. -Abnormal pressure distribution. -Adverse effect of prosthesis: Low Back Pain.
Discharge	-Patient demonstrates desired functional outcomes with proper prosthetic use during desired functional activities.
Lifelong care	-Follow up visit at least every 6-12 months: • To re-assess and maximize the patient functional independence and goals.

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Upper Limb Amputation Rehabilitation Protocol

Upper limb amputation protocol
Phase 1: post-operative stage (1st day after surgery)

Rehabilitation goal	- Reduce pain and edema. -Provide stump protection. - Minimize complications. - Maintain muscles strength, stability and ROM of proximal body. - Improve ADL. - Patient education and HEP. - Obtain vocational interests.
Intervention	-Pain management: • ES and desensitization exercises. -Reduce of edema: • Compression therapy (dressing and compression socks) and elevation and active exercises. -Stump care: • Stump protection and shaping by bandaging • Prevent skin adhesion and scar formation: gentle soft tissue mobilization. -Prevent of contracture: • Proximal limb PROM ex, stretching ex, positioning. -Strengthening, stability and ROM exercises: • PROM and AAROM exercises in all planes of motion in residual and contralateral limb. • Initiate strengthening for major muscles of UE. • Initiate core stabilization exercises: pelvic tilt and bridge. • Initiate balance progression: static sitting balance and weight shifting. -Initiate ADL training: • Eating, dressing, grooming, bathing and toileting. • Provide training to perform basic ADL with one hand. -Education: • Provide education about available assistive devices. • Home modification.
Progression criteria	-Residual limb incision closed and free of infection. -Sutures removed. -Self-care activities of ADL using one-handed strategies progressed. -Patient has been medically cleared for further rehabilitation.

Phase 2: pre-prosthetic phase (out-patient stage)

Rehabilitation goal	- Phantom pain management. - Improve stump shape. - Contracture prevention. - Improve muscles strength, stability and ROM. - Achieves independent ADL. - Prepare the patient for initial prosthesis fitting. - Education and psychosocial support.
Intervention	-Phantom pain management: • Mirror therapy and desensitization exercises. -Stump shaping: • Bandaging – compression socks – shrinker. -Contracture prevention: • Proper positioning • Stretching exercises • PNF technique -Strengthening, stability and ROM exercises: • Continue strengthening program for all ULs. • Maximize ROM of scapula, shoulder girdle, elbow and wrist. • Advance to AROM of residual and contralateral limb. • Trunk and stability exercises: progress dynamic balance. • Gait training exercises. -Achieves of independent ADL: • Independent toileting, bathing, dressing, buttoning, writing and self-care. • Begin IADL and driving modification. • Continue training of ADL perform by one hand.
Progression criteria	-Fitting of the initial prosthesis occurred.

Phase 3: post-prosthetic stage (within 5 days after receipt of the prosthesis)

Rehabilitation goals	-Enhancement of prosthetic wearing and utilization. -Continue contracture prevention and maximize ROM. -Improve balance and stability with prosthesis use. -Improve ADL with prosthesis use. -Provide continued psychosocial support. -Encourage patient to resume hobbies, sports, social activities and driving.
Interventions	-Prosthesis wearing and utilization: • Teach the patient donning /doffing of prosthesis. • Prosthesis wearing time gradually increased as patient tolerance. -Improve balance and stability: • Advance balance activities and challenge UL functional reach. -Strengthening: • Progress therapeutic exercises program for all extremities. • Focus on endurance activities. - Improve ADL / IADL with prosthesis: • Practice as appropriate • Initiate vocational training activities. • Consider activity-specific prosthesis to meet goals. • Continue driving training as needed.
Precaution	-Ongoing pain in the residual limb. -Skin breakdown. -Change in the ability to don or doff the prosthesis -Change in limb volume. -Change in pattern of usage.
Discharge	-Patient demonstrates desired functional outcomes with proper prosthetic use during desired functional activities.
Lifelong care	-Follow up visit at least every 6-12 month: • To re-assess and maximize the patient functional independence and goals.

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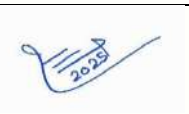
1. Hussein Ahmed Alhassany Senior MSK Physical therapist Administration of Medical Rehabilitation & LTC, Jazan Health Cluster	
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