



The Rehab Guide

through physical therapy
and mental health



for **all** lower-limb amputees

Sevana Babaian
April 2022



This booklet belongs to :



My rehabilitation journey begins :

/ /



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This booklet has been produced for the benefit of amputees and for those who work with amputees including family members, carers and healthcare professionals. The purpose is to provide clear educational and clinical information about physical and psychological rehabilitation after an amputation.

Please note that not all of the content within this booklet is original. References have been provided for information which has been adapted.

The information presented is not a replacement for therapy assessment, diagnosis, intervention or medical advice. A trained physical and/or psychological therapist should be consulted prior to administering any interventions in this booklet.

For questions, please contact the **oqni** team at contact@oqni.org.



Contributors

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Haikouhi Oroudjian was born in Armenia in 1989. Very young she moved to Los Angeles, then as a pre-teen she moved to France. She studied Clinical Psychology and Criminology and became a psychologist specialising in psychopathologies. Haikouhi has worked in numerous clinics and hospitals but her main experience came from helping women who were victims of domestic violence. Prior to her move to Armenia she worked as a Data Consultant for Microsoft. However, through the years, she realised the double-standards in the workforce and decided to immerse herself in a male-dominated field such as Artificial Intelligence (A.I). As many other diasporans, the war was a call to action. She moved to Armenia and through amazing friendships, **oqni** was born.

Therapists for Armenia is a 501 (c)(3) non-profit organization interested in enhancing rehabilitation, education, and disability services for Armenians. Their mission is to advance the fields of occupational, physical, and speech therapy through educational outreach, collaboration, and advocacy; to promote accessibility and inclusion of people with disabilities; and to foster well being through a synergy of services, supports, and resources within Armenian communities.



Acknowledgements

In 2020, Armenians around the world experienced one of the most challenging times of our history. We would like to thank and honour our heroes who defended, and continue to defend us and our country in the time of need. For those who made the ultimate sacrifice, we offer their families our deepest condolences.

We would like to express our sincere thanks and appreciation to all who contributed to the production of this booklet, especially: Eric Yeghian, Paty Chouchane Tanielyan, Dr. Karen Koloyan, Erkki Wollstein, Gassia Tatikian, Calouste Gulbenkian Foundation, Hirair and Anna Hovnanian Foundation, Saint Sarkis Charity Trust, Therapists for Armenia, Armenian Healthcare Association of the Bay Area, Ortez Orthotic Centre and ArBeS Health Care Centre. We would not have been able to complete this project without you.



SAINT SARKIS CHARITY TRUST



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1. Introduction

What is **oqni**?



We are an Armenian-based NGO founded by an interdisciplinary team of Diasporan Armenians across the US, Canada, France, UK, Germany, and Armenia.



Our mission is to develop advanced mental health solutions and bionics to empower the amputee community. We are driven by a holistic approach focusing on both psychological and physical empowerment; while also creating a public good by training and educating students, war veterans, and amputees.



oqni's initiative grew out of necessity as a result of the recent war in 2020; this added to an already relatively high number of amputees, a lack of modern technology, complete neglect of mental health, and limited funds available.



We are determined to create AI-driven bionic prosthetics and engage in collaborative research and development and are driven to employ our solutions in amputee communities across the world.

What is a **prosthesis**? ¹

Prostheses are otherwise known as artificial limbs. They are devices used to replace a missing upper or lower limb. By wearing a prosthesis, an amputee can stand, maintain balance and walk.

A lower limb amputation is defined as the removal of the limb through a part of one of the lower limb bones and joints. The function of the lower limb is weight bearing and locomotion. Lower limb prostheses are used to provide an individual who has an amputated limb with the opportunity to perform functional tasks, particularly ambulation (walking).

2. How to get a prosthesis

Step 1

After surgery, one returns home and applies to the Medical Social Expert Commission (MSEC) (regional) to receive a disability group.

Step 2

After receiving the disability group, the commission provides the individual with an individual rehabilitation program (IRP).

Step 3

The individual with his/her documents (passport, social card, disability certificate, IRP) applies to the med-technical commission so that the members of the commission can examine the residual limb and give a conclusion about the prosthesis.

Step 4

The individual applies to the Territorial Unified Social Service and presents his/her documents (passport, social card, disability certificate, IRP and conclusion) to be issued a certificate.

Step 5

The beneficiary is notified about the certificate's availability and applies for a prosthesis from their desired prosthetic centre.



3. Caring for the residual limb and prosthesis

Residual limb

After an amputation, the skin around the residual limb will be fragile, therefore it is imperative that it is well looked after. By following the suggestions listed below, an amputee should be able to keep the residual limb^{2,4} healthy.

- 1** Wash the residual limb with mild soap and water **every day** (more often if the individual sweats heavily) and pat it dry with a soft towel. Be patient and allow it to dry **completely**. If this is not done, the residual limb will be at risk for fungal growth that could lead to infection or abrasion.
- 2** Check the residual limb for red pressure patches that last more than a few minutes after the prosthesis is removed; these may be a sign that there is a fit problem with the socket and it may need changing. A red spot that turns into an ulcer can mean weeks without being able to use your prosthesis. If left untended, these red patches may result in skin breakdown.
- 3** The skin should be checked for breakdown **twice a day** – if the amputee cannot see the end of their residual limb, they could use a mirror. If there is skin breakdown, the prosthesis should not be used and a prosthetist/doctor should be called.
- 4** If the individual has reduced or no sensation in the residual limb, the limb should be checked more frequently during the day. It should **not** be exposed to hot water or the sun as this may cause irritation.

The importance of weight control as an

amputee, During rehabilitation and beyond, it is important to eat as healthily as possible and have a stable weight. This is important for everybody, but for people who have prosthetic limbs it is even more important for the following reasons:⁵

- To maintain the proper fit of the prosthetic socket attached to the residual limb
- To reduce the pressure on the weight-bearing area of the skin
- To reduce the energy required to use the prosthesis
- To prevent or reduce secondary conditions, such as back pain
- To manage the risk of medical conditions such as diabetes and high blood pressure

Prosthesis

Since the individual will be relying on the prosthesis to help them walk, it is important to know how to take care of it. All prostheses and liners will have care instructions provided by the manufacturer which are important to read. By following the suggestions listed below, the prosthesis should remain in good working order:



As with the residual limb, it is important to clean the prosthesis daily to prevent the build-up of sweat, dirt and bacteria. The inside of the prosthesis should be cleaned with a damp cloth and mild soap (washing up liquid is an example). The soft liner (the part of the socket that touches the skin) and any rubber padding should also be cleaned.



The prosthesis should not be immersed fully in water. Wipe off the soap with a clean cloth and dry the prosthesis completely. Solvents or harsh cleansing agents (e.g. acetone) should not be used as these could damage the thermoplastic material. The socket can also be disinfected with alcohol or a solution of disinfecting soap.



The exact cleaning schedule varies from person to person and highly depends on the season and the climate. A warm and hot summer will require frequent cleaning whereas it may not be as necessary during winter. In general, it is best to clean the socket every day or every other day. The best time of day to clean a prosthetic socket is at night, as this leaves enough time for the socket to dry completely. Cleaning it in the morning has the potential to cause the skin to react negatively due to any remaining dampness.

Storing the prosthesis properly

When the prosthesis is not being worn, it should be leaned carefully against a wall where it will not get bumped or knocked over.



DO NOT store your prosthesis in a hot environment such as in direct sunlight, in a parked car or near any heat source.

NEVER attempt to make any adjustments to the prosthesis. If something becomes loose, is working incorrectly, is making strange noises or is suddenly uncomfortable, the prosthesis should not be used and a prosthetist should be contacted immediately.



4. How to prevent contractures

What are contractures?

Contractures are the permanent or semi-permanent tightening of the muscles, tendons, joint capsule, skin and nearby tissue that causes the muscles to shorten and the joints to become ⁷very stiff.


When these soft tissues surrounding the joints in the body become shortened or inelastic, a joint contracture develops that can severely limit the motion of the joint or even freeze it in one position.

This occurs for a variety of reasons. Nerve damage or neurologic diseases paralyse muscles; injuries or burns will cause inelastic scar tissue; and immobilisation for prolonged periods such as casting after fracture or surgery will cause structural changes and shortening. Often, just inactivity due to illness or to joint pain will reduce the range of joint motion through the ^{8,9}changes noted above.



How can you prevent contractures?

Prevention is certainly the best approach to dealing with contractures because they are extremely difficult to stretch out once they develop. Limited time spent up and moving about is the likely cause of most contractures. Lying in a hospital bed with the head of the bed up and the knees bent up or pillows under the knees is a sure way to induce contractures at the hips and knees.

 Some studies have indicated that at least 5 to 6 hours of activity per day is required to maintain normal joint motion regardless of time spent stretching every day. Stretching can certainly help, but activity, such as walking, and exercise are even more important for maintaining joint range of motion, especially when someone is limited to bed activity or wheelchair activity.

To help prevent complications, the exercises in this booklet should be completed daily.

5. Managing phantom limb pain

After an amputation, nearly all individuals will experience phantom sensation, or the feeling that the absent limb is still there. This is not necessarily painful, but rather the sensation of an itch or the twitching of toes, etc. Some phantom sensation will usually be present for life, but substantially decrease with healing and prosthetic use.

It is believed that this aching and throbbing sensation results from a mix-up in nervous system signals, specifically between the spinal cord and brain. When a body part is amputated, the nerve connections from the periphery to the brain remain in place. The brain can misinterpret the information it is receiving or process the signals as the sensation of pain, even if the amputated portion has since been removed.¹⁰

Massage and tapping techniques (pg. 6) can be used to decrease the experienced pain. To understand why, consider being hit in the arm. The first thing you do is grab your arm or rub it over a broad area which causes inhibitory messages to be generated from the skin and diminishes the perception of painful messages coming from the irritated internal nerves.^{10,11}



Mirror therapy (pg. 6) is another technique which can be used to alleviate pain. The principle of mirror therapy is the use of a mirror to create a reflective illusion of an affected limb in order to trick the brain into thinking movement has occurred without pain, or to create positive visual feedback of a limb movement. It involves placing the affected limb behind a mirror so the reflection of the opposing limb appears in place of the hidden limb.¹²

The exercises in this booklet which include muscle stretching and strengthening not only improve general health but also interrupt pain signals, which can help with the pain.



Massage and tapping

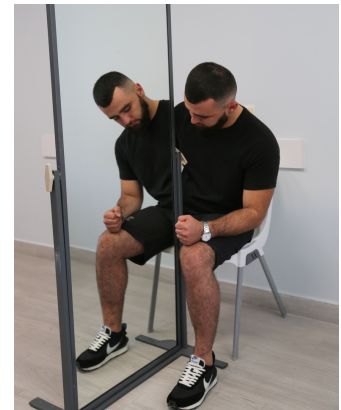
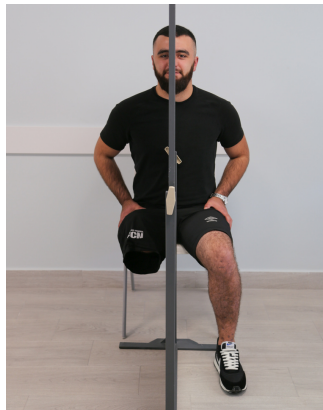
Early massage and tapping of your residual limb will help you develop a tolerance in your residual limb to both touch and pressure. Both of these techniques can be performed through your soft compression dressings and when the soft compression dressing¹³ is off.

- 1 Using one or two hands, massage your residual limb using a gentle kneading motion. (Initially, be especially cautious when massaging over your stitched area.)
- 2 Over time and once your sutures are removed, you can increase the pressure to massage deeper soft tissues and muscles in your residual limb.
- 3 This should be done for at least **5 minutes, 3-4 times a day**. It can be done more often if it is found to be helpful in reducing phantom pain.

The above could also be carried out with a tapping motion with one or two hands.

Mirror Therapy

Place the unaffected limb onto one side of the mirror, and the residual limb onto the other. Then, look into the mirror on the side with the unaffected limb and make movements with your leg as well as tapping it. As you see the reflected image of the unaffected leg moving, it appears as if the amputated leg is also moving.




Mirror therapy should be completed 3-4 times a week for approximately 15 minutes - the patient may find that removing the sock and shoe can be more beneficial.

Through the use of this artificial visual feedback, it becomes possible for the patient to "move" the amputated limb, and to unclench it from potentially painful positions.¹⁴

Wrapping

After an amputation, it is normal to experience swelling on the residual limb. Therefore, one of the most important stages to undergo is wrapping. Wrapping the residual limb with elastic bandages helps to protect the healing tissue, reduce swelling and shape the residual limb for a prosthesis.

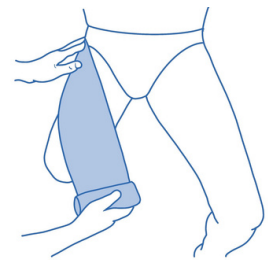
 Tip 1 - always use a clean wrap with good elastic quality

 Tip 2 - the wrap should be anchored to itself using tape - avoid using pins or clips

Wrapping for above knee amputations ¹⁵

1

Anchor the end of the bandage on the outside of the hip with one hand. Start the wrapping diagonally down across to the bottom inside corner. Wrap around the back end to secure both sides. Advance diagonally up across the front aspect towards the groin.



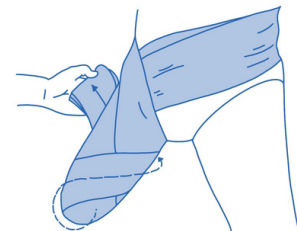
2

Continue wrapping around the top portion of the thigh, outside the hip and begin advancing across the abdomen. Wrap around the trunk once and down through the groin region as high as possible.



3

Repeat step 1 and begin wrapping in a figure-eight pattern. Apply the greatest stretch at the bottom portion so circulation isn't impaired.



4

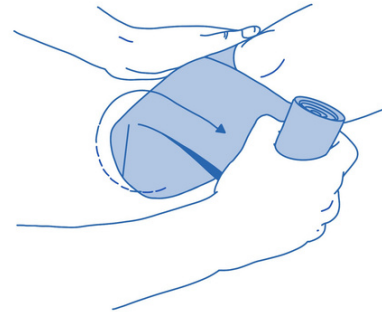
Anchor the end of the bandage with adhesive tape. Leave no open skin areas apart from the knee cap.



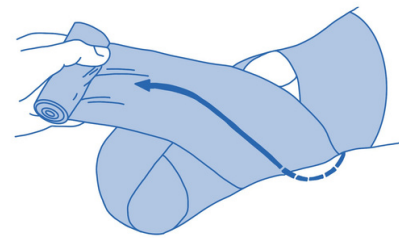
Wrapping

Wrapping for below knee amputations¹⁶

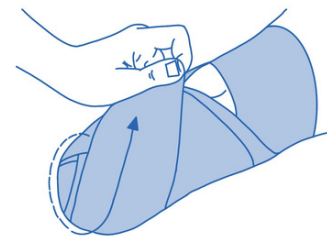
- 1 Place the end of the bandage just above the knee and wrap it down the residual limb, over the end, and then back up to the other side above the knee. Avoid wrinkling the bandage throughout this wrapping process. Turn the bandage horizontally and circle it around the residual limb to secure both sides.



- 2 Begin wrapping in a figure-eight pattern. Apply the greatest stretch at the bottom portion so circulation isn't impaired. On the last upward pass, cover the front of the residual limb, then wrap the bandage horizontally above the knee. Bring the bandage to the front of the residual limb, then wrap diagonally more figure-eight turns, covering the end of the limb and finishing with the end of the bandage at the front.

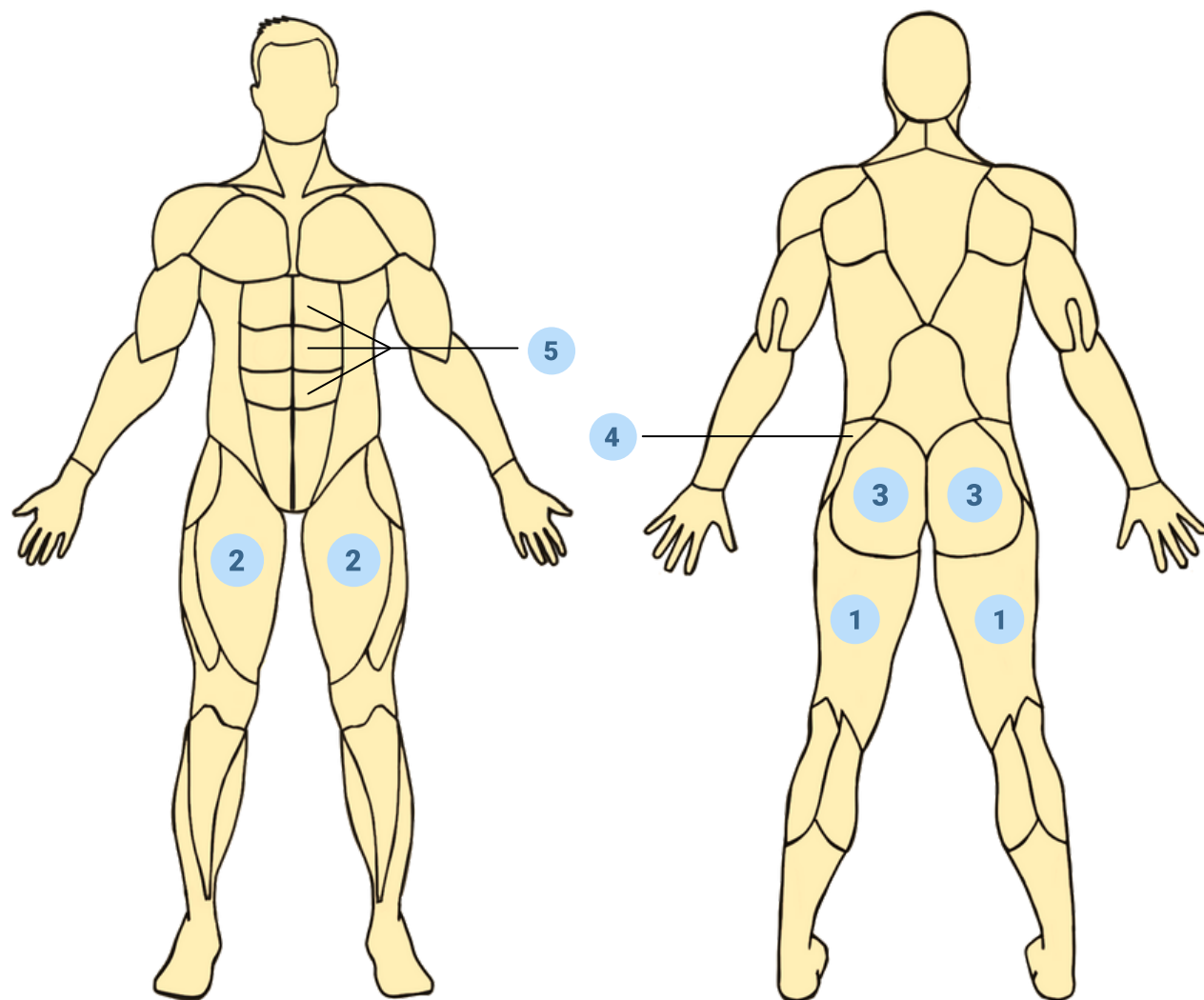


- 3 Anchor the end of the bandage with adhesive tape. Leave no open skin areas apart from the knee cap.



DO NOT wrap the residual limb in a circular motion as this could impair circulation and knee movement.

6. Exercises



Muscles of the Human Body

The body chart above indicates the specific muscles which will be working for the exercises presented in this booklet where a prosthesis is not worn.



Note - all the exercises in this booklet can be completed with both above and below knee amputations



It is important to take an active role in your rehabilitation. The following exercises must be approved by your healthcare professional. If you experience any symptoms of weakness, unsteadiness, light-headedness or dizziness, chest pain or pressure, nausea, or shortness of breath, stop the exercise and contact your physician. Mild soreness after exercise may be experienced after beginning a new exercise program. Contact your healthcare provider if the soreness does not improve within 2-3 days.





Tip - whilst completing the exercises do not hold your breath; remember to breathe out while working and breathe in while relaxing

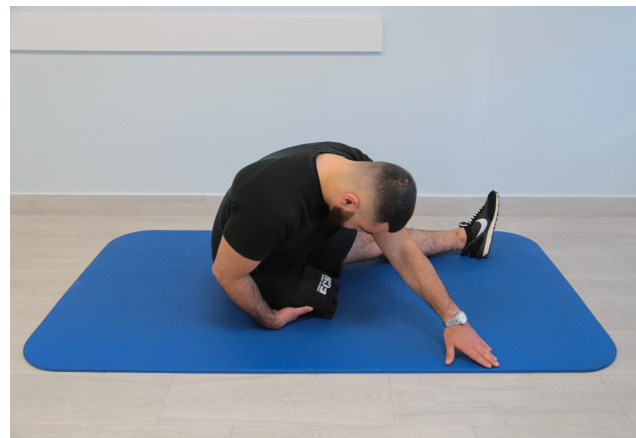
Exercises without prosthesis ¹⁷⁻²¹

You should always remove your prosthesis before completing these exercises. If you complete these exercises with your prosthesis, your amputated leg may experience dangerous pressures around your residual limb and even skin breakdown. Try to complete these exercises at least once a day.

6.1 Hamstring Stretch – hamstrings 1

Sitting on the floor, straighten your amputated limb. With the opposite arm, reach over to the side of the residual limb until you feel a stretch under your residual limb. You may place a pillow underneath the knee or end of the residual limb for added comfort.



-  Hold this position for **10 seconds**
-  **Repeat 3 times**, and then switch legs



6. Exercises

6.2 Straight Leg Raise - quadriceps 2


Have your non-amputated leg resting on the ground, then lift your amputated leg towards the ceiling, keeping it as straight as possible.

-  Hold this position for **3 seconds**
-  **Repeat 10 times**, and then switch legs



6.3 Hip extension in prone - hamstrings and gluteal muscles 1 + 3



Lie on your stomach. Lift one leg as high as possible, then lower.

-  **Repeat 10 times**, and then switch legs



6.4 Static Quadriceps - hamstrings and gluteal muscles (for AKA) 1 + 3 - quadriceps (for BKA) 2



Lying down with a pillow under your residual limb, extend your limbs straight out in front of you. Push the back of your amputated leg into the pillow and tighten your thigh muscles.

-  Hold this position for **5 seconds**
-  **Repeat 10 times**, and then switch legs



6.5 Leg Adduction - adductors

Sit upright on a chair with your legs apart. Place a small ball in between your legs. Squeeze your legs together to prevent the ball from falling.



-  Hold this position for **5 seconds**
-  **Repeat 10 times**



6. Exercises

6.6 Leg abduction - abductors 4


Sit on the floor with a resistance band wrapped around your thighs. Increase the space between your legs by pushing outwards and increasing the size of the resistance band.

-  Hold this position for **5 seconds**
-  **Repeat 10 times**, and then switch legs



6.7 Leg rotations - all hip muscles



Sitting with your legs shoulder width apart, straighten and raise your amputated leg off the floor and make small circles, first to the left and then the right.

-  Repeat **10 times**, and then switch legs.



6.8 Bridging - gluteal muscles 3


Lie flat on your back with two pillows/books under your amputated leg. Pull in your stomach, tighten your buttocks and lift it off the ground. Press your amputated leg into the pillows/books so that your hips are lifted up.

-  Hold this position for **5 seconds**
-  **Repeat 10 times**, and then switch legs



6.9 Hip extension in side lying - hamstrings and gluteal muscles 1 + 3

Lie on your side with your amputated leg on top and push your body up with your arm. Lift your top leg and bend it towards your chest then push it backwards. Try not to let your hips roll forwards or backwards.

-  **Repeat 10 times**, and then switch legs



6. Exercises

6.10 Crunches - rectus abdominis 5

Lie on your back with both your hands behind your head. Your spine and hips should be in a neutral position. Begin the upward movement by squeezing your abdominal muscles and then curl your shoulders off the floor. Pause at the top of the movement. Slowly lower to the starting position while maintaining tension in your abdominal muscles.

 Repeat 10 times



Exercises with prosthesis ¹⁷⁻²¹

To develop agility with a prosthesis, it is important to practice moving in multiple directions and, therefore, using your muscles in a variety of positions.

6.11 Walking

The most efficient way to better walk with your prosthesis or prostheses is to practice. Walk as much as possible (as guided by your healthcare professional and whether they have advised you to walk with or without walking aids).



6.12 Side-stepping


To improve agility and to also strengthen the hip muscles, take 5 steps to one side and then to the other. This can be completed by side-stepping towards the foot already placed on the ground or side-stepping behind the foot.

 Repeat 3 times



6.13 Sideways weight-shifting

Stand in between two chairs and slowly begin to shift your weight from one leg to another.

 Repeat 10 times



6. Exercises

6.14 Stability practice

Place the unaffected foot on top of the ball. Keep the foot flat on the ball and roll it forward, backwards, side-to-side and in circles. Feel the muscles working in the prosthetic-side hip as the weight shifts with the movements of the unaffected foot.


 **Complete for 1 minute with each foot**

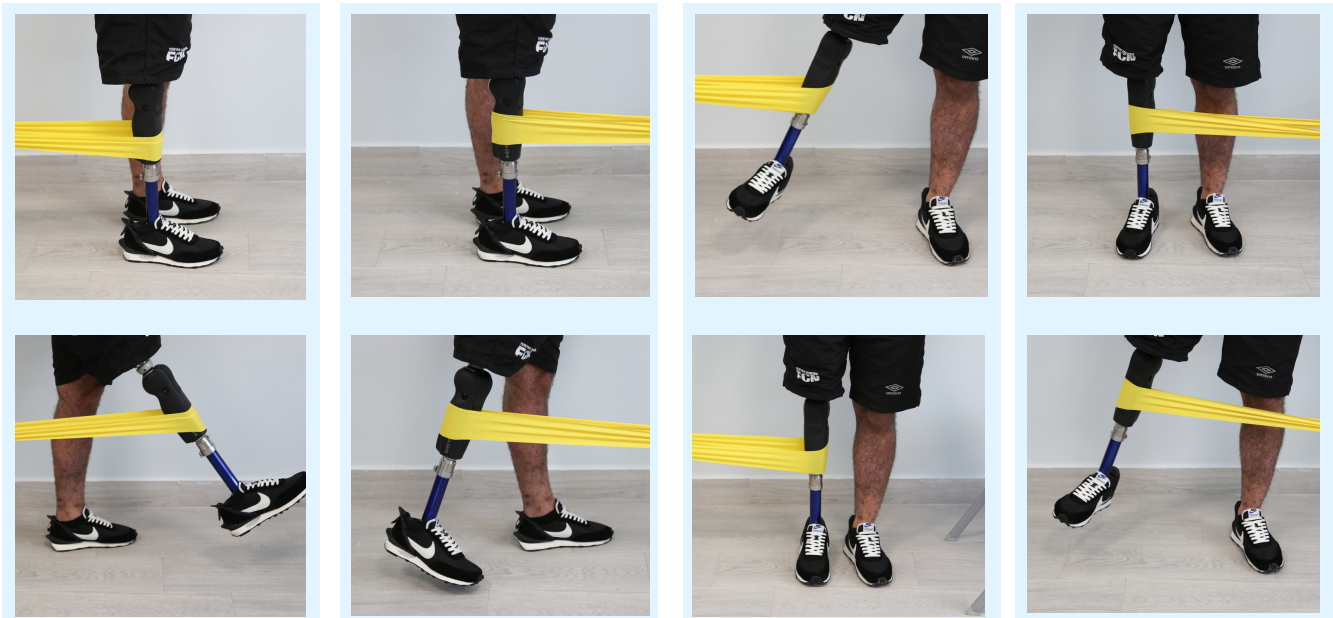


6.15 Resisted Elastic Kicks

To help strengthen the residual limb muscles, resisted exercises are important. Tie one end of your resistance band to a stable column and the other end to your prosthesis. Complete the following with a straight leg:

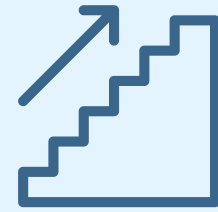
- Slowly kick your leg forwards
- Slowly extend your leg backwards
- Extend your leg outwards to the left as well as right

 **Repeat each exercise 10 times, and then switch legs**





Additional exercise - climbing up and down the stairs is also a recommended exercise to complete with a prosthesis. This will help strengthen the muscles of the lower limb. It is important to hold onto either or both of the handrails to maintain balance.



7. Mental Health

An amputation is traumatic both as a surgery itself and also due to its consequences. Perceived as an aggression to bodily integrity, besides physical suffering, it can initiate or aggravate a series of disharmonies that disrupt an individual's well-being. Amputations cause considerable changes in everyday life of the patient, and especially in psychosocial relationships.²⁰

Below are a number of psychological conditions that an amputee may experience followed by how to try to overcome them. Every technique may not necessarily work for each individual therefore it's important to trial them and see which one is best suited.²²

1. Post Traumatic Stress Disorder (PTSD)²³

While you can develop symptoms of PTSD in the hours or days following a traumatic event, sometimes symptoms don't surface for months or even years later. While PTSD develops differently in each amputee, there are four symptom clusters:

- Recurrent, intrusive reminders of the traumatic event, including distressing thoughts, nightmares, and flashbacks where you feel like the event is happening again. You may experience extreme emotional and physical reactions to reminders of the trauma such as panic attacks, uncontrollable shaking, and heart palpitations.

- Extreme avoidance of things that remind you of the traumatic event, including people, places, thoughts, or situations you associate with the bad memories. This includes withdrawing from friends and family and losing interest in everyday activities.
- Negative changes in your thoughts and mood, such as exaggerated negative beliefs about yourself or the world and persistent feelings of fear, guilt, or shame. You may notice a diminished ability to experience positive emotions.
- Being on guard all the time, jumpy, and emotionally reactive, as indicated by irritability, anger, reckless behavior, difficulty sleeping, trouble concentrating, and hypervigilance (increased alertness).

PTSD can leave you feeling vulnerable and helpless. But you have more control over your nervous system than you may realize. When you feel agitated, anxious, or out of control, these tips can help you change your arousal system and calm you.



Mindful breathing: To quickly calm yourself in any situation, simply take 60 breaths, focusing your attention on each 'out' breath.



Sensory input: Just as loud noises, certain smells, or the feel of sand in your clothes can instantly transport you back to the combat or accident zone, so too can sensory input quickly calm you. Everyone responds a little differently, so experiment to find what works best for you. Think back to your time on deployment or back at home: what brought you comfort at the end of the day? Perhaps it was looking at photos of your family? Or listening to a favourite song, or smelling a certain brand of soap? Or maybe petting an animal quickly makes you feel calm?



Reconnect emotionally: It's normal to want to avoid remembering or re-experiencing what you went through. But the problem is that avoiding those memories doesn't make them go away. In fact, when you try to suppress them, the thoughts, images, and dreams can actually become more threatening and intrusive. The only way to heal and move on is to reconnect to what you feel. This can be a terrifying step, but you can learn to reconnect with even the most uncomfortable emotions without becoming overwhelmed.



2. Flashbacks and nightmares²⁴

For war veterans with PTSD, flashbacks usually involve visual and auditory memories of combat. It feels as if it's happening all over again so it's vital to reassure yourself that the experience is not occurring in the present. Trauma specialists call this "dual awareness."

Dual awareness is the recognition that there is a difference between your "experiencing self" and your "observing self." On the one hand, there is your internal emotional reality: you feel as if the trauma is currently happening. On the other hand, you can look to your external environment and recognise that you're safe. You're aware that despite what you're experiencing, the trauma happened in the past. It is not happening now.

State to yourself (out loud or in your head) despite your perception of your current environment, you can look around and recognise that you're safe. Use a simple script when you awaken from a nightmare or start to experience a flashback: "I feel [panicked, frightened, overwhelmed, etc.] because I'm remembering [traumatic event], but as I look around I can see that the event isn't happening right now and I'm not in danger."



Describe what you see when you look around (name the place where you are, the current date, and three things you see when you look around).

If you're starting to disassociate or experience a flashback, try using your senses to bring you back to the present and "ground" yourself. Experiment to find what works best for you.

- **Movement** - Move around vigorously (run in place, jump up and down, etc.); rub your hands together; shake your head
- **Touch** - Splash cold water on your face; grip a piece of ice; touch or grab on to a safe object; pinch yourself; play with worry beads or a stress ball
- **Sight** - Blink rapidly and firmly; look around and take inventory of what you see
- **Sound** - Turn on loud music; clap your hands or stomp your feet; talk to yourself (tell yourself you're safe, and that you'll be okay)
- **Smell** - Smell something that links you to the present (coffee, mouthwash, your significant other's perfume or cologne) or a scent that recalls good memories
- **Taste** - Suck on a strong mint or chew a piece of gum; bite into something tart or spicy; drink a glass of cold water or juice

3. How to release stress²⁴

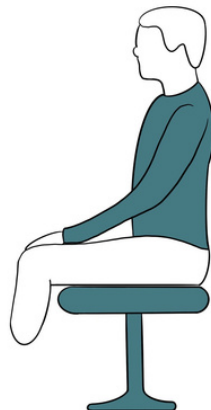
Deep breathing

With its focus on full, cleansing breaths, deep breathing is a simple yet powerful relaxation technique. It's easy to learn, can be practiced almost anywhere, and provides a quick way to get your stress levels in check. Deep breathing is the cornerstone of many other relaxation practices, too, and can be combined with other relaxing elements such as aromatherapy and music. While apps and audio downloads can guide you through the process, all you really need is a few minutes and a place to sit quietly or stretch out.

How to practice deep breathing:

- Sit comfortably with your back straight. Put one hand on your chest and the other on your stomach.
- Breathe in through your nose. The hand on your stomach should rise. The hand on your chest should move very little.
- Exhale through your mouth **slowly**, pushing out as much air as you can while contracting your abdominal muscles. The hand on your stomach should move in as you exhale, but your other hand should move very little.
- Continue to breathe in through your nose and out through your mouth. Try to inhale enough so that your lower abdomen rises and falls. Count slowly as you exhale.

If you find it difficult breathing from your abdomen while sitting up, try lying down. Put a small book on your stomach, and breathe so that the book rises as you inhale and falls as you exhale.



Visualisation

Visualisation, or guided imagery, is a variation on traditional meditation that involves imagining a scene in which you feel at peace, free to let go of all tension and anxiety. Choose whatever setting is most calming to you, whether it's a tropical beach, a favorite childhood spot, or a quiet wooded glen. You can practice visualization on your own or with an app or audio download to guide you through the imagery. You can also choose to do your visualization in silence or use listening aids, such as soothing music or a sound machine or a recording that matches your chosen setting: the sound of ocean waves if you've chosen a beach, for example.

Close your eyes and imagine your restful place. Picture it as vividly as you can: everything you see, hear, smell, taste, and feel. Just "looking" at it in your mind's eye like you would a photograph is not enough. Visualization works best if you incorporate as many sensory details as possible. For example, if you are thinking about a dock on a quiet lake:

- See the sun setting over the water
- Hear the birds singing
- Smell the pine trees
- Feel the cool water on your bare feet
- Taste the fresh, clean air

Enjoy the feeling of your worries drifting away as you slowly explore your restful place. When you are ready, gently open your eyes and come back to the present. Don't worry if you sometimes zone out or lose track of where you are during a visualisation session. This is normal. You may also experience feelings of heaviness in your limbs, muscle twitches, or yawning. Again, these are normal responses.



Mindfulness meditation

Mindfulness has become extremely popular in recent years, garnering headlines and endorsements from celebrities, business leaders, and psychologists alike. So, what is mindfulness? Rather than worrying about the future or dwelling on the past, mindfulness switches your focus to what's happening right now, enabling you to be fully engaged in the present moment.

Meditations that cultivate mindfulness have long been used to reduce stress, anxiety, depression, and other negative emotions. Some of these practices bring you into the present by focusing your attention on a single repetitive action, such as your breathing or a few repeated words. Other forms of mindfulness meditation encourage you to follow and then release internal thoughts or sensations. Mindfulness can also be applied to activities such as walking, exercising, or eating.

Using mindfulness to stay focused on the present might seem straightforward, but it takes practice to reap all the benefits. When you first start practicing, you'll likely find that your focus keeps wandering back to your worries or regrets. But don't get disheartened. Each time you draw your focus back to the present, you're strengthening a new mental habit that can help you break free of fretting about the past or stressing about the future. Using an app or audio download can also help focus your attention, especially when you're starting out.

A basic mindfulness meditation:

- 1 Find a quiet place where you won't be interrupted or distracted.
- 2 Sit on a comfortable chair with your back straight.
- 3 Close your eyes and find a point of focus, such as your breathing—the sensation of air flowing into your nostrils and out of your mouth or your belly rising and falling.
- 4 Don't worry about distracting thoughts that go through your mind or about how well you're doing. If thoughts intrude your relaxation session, don't fight them, just gently turn your attention back to your point of focus, without judgment.



8. Inspiring advice



Gohar Navasardyan

Disabled in 2003 due to post-traumatic meningitis

Program Coordinator at Armenian National Paralympic Committee

Disability is not a verdict, it is a struggle that is given to the strong, because only they can overcome all the difficulties and endure that struggle. Disability should not be a reason to give up on your goal, on the contrary, it should increase your desire to achieve the goal.

We all live our lives hoping for a better future. But it is important to remember that we must put ourselves first. We simply have no right to despair or wait for the pity of others to achieve our goals. Putting our hopes on ourselves, with our strong will and strength, we are able to overcome all the difficulties that have arisen against us.



Stas Nazaryan

Amputated from the 1988 Spitak earthquake

President of the Armenian Paralympic Federation, 6 time participant of the Paralympic Games, coach and athlete

8. Inspiring advice



Zaven Zakari Maroutyan

Amputee from the 2020 Artsakh war

1993-94 and 2016 war veteran, 2020
Artsakh war commander

In life, there are many things in that are more painful than the loss of a leg, arm or other body part. One of them is fear. It is impossible to live a full, happy life if every step or decision dictates that fear. A person with a disability is not a person who has lost a leg, arm or other body part. That's what you have to overcome - the psychological state. Life is wonderful and it goes on. Let's be strong - let's overcome that state of mind.

For a long time I was convinced that life is a straight path, but for some of us this 'straight path' deviates. Life often puts us in inevitable situations. After my amputation, I had many questions about my life. One of which was 'What can I do with a prosthesis?' The answer: everything. After changing direction from the standard way of life, you start living fully. Never forget, everything is possible.



Artur Babloyan

Amputee from the 2020 Artsakh war

2020 Artsakh war participant



9. Who can help?



Scan the QR code to join our community! Here, you will be kept up to date with all of our projects and events.

Clinics:



Luys Barry Rehabilitation Centre

16 Building, Tsitsernakaberd Highway, Yerevan, 0082, Armenia

Tel: +374 11 269950

Web: barry.am



Homeland Defenders Rehabilitation Centre / Zinvori Tun

58 Abovyan street, Yerevan, 0025, Armenia

Tel: +374 11 202520

Web: helpheroes.am



Interorto Prosthesis Centre

39 Building, Rubinyants Street, Yerevan, 0052, Armenia

Tel: +374 10 624330/ +374 91 218259

Web: ottobock.ru



Kamar Prosthetic and Orthotic Centre

55a Building, Tsarav Aghbyur Street, Yerevan, 0035, Armenia

Tel: +374 91 432482

Web: kamarorto.am



NanoPro

31 Building, Karapet Ulnetsu Street, Yerevan, 0037, Armenia

Tel: +374 93 207184

Web: nanopro.am





Ortez Orthotic Centre

32 Building, Vahram Papazyan Street, Yerevan, 0012,
Armenia

Tel: +374 10 269922 / +374 99 269922

Web: ortez.am

Other medical and rehabilitation institutions:



Armenian Wounded Heroes Fund

270 Arshakunyats Avenue, Yerevan, 0026, Armenia

Tel: +374 99 442050

Web: armenianwoundedheroes.com

Provides a gym for amputees and injured war veterans



Cross Health Centre (Red Cross Gratsia)

50/12 Ashtarak Highway, Yerevan, 0088, Armenia

Tel: +374 11 773773

Web: crosscenter.am

Medical centre providing physical rehabilitation



ՀՀ ազգային հերոս
Վահագն Ասատրյանի անվան
Հերոսների Վերականգնողական Քաղաք

Rehabilitation City of Heroes named after the National Hero of the RA Vahagn Asatryan

Proshyan, Kotayk Region

Tel: +374 93 551104

Email: info@city-of-heroes.com

Providing psychological rehabilitation for war veterans



The Lady Cox Rehabilitation Centre

41a Wiliam Saroyan, Stepanakert, 375000, Artsakh

Tel: +374 47 950455

Web: coxrehabcentre.am

Providing physical and psychological rehabilitation for disabled individuals



9. Who can help?



Wigmore Clinic

56 Pushkin Street, Yerevan, 0002, Armenia

Tel: +374 12 345678

Web: wigmoreclinic.am

Medical centre providing physical rehabilitation

Supportive Organisations:



Eternal Nation

Web: eternalnation.org

Email: info@eternalnation.com

Rebuilding the lives of injured Armenians through physical, mental and vocational rehabilitation



Armenian Camp NGO

47 Isakov Street, Artashat, 0701, Armenia

Tel: +374 99 442050

Web: armenianwoundedheroes.com

Organises camps and outdoor activities for amputees



Armenian Para Athletics Federation

Tel: +374 99 150140

Web: parasport.am

Email: armparaathletics@gmail.com

Organises sporting activities for amputees



Armenian Healthcare Association of the Bay Area

Web: ahabaf.org

Email: ahabamail@yahoo.com

Fostering collaboration among Armenian healthcare professionals in the Bay Area to support healthcare programs in Armenia and locally

9. Who can help?



Frontline Therapists

39 Building, Pavstos Buzand Street, Yerevan, 0010, Armenia

Tel: +374 91 611745

Web: frontlinetherapists.org

Provides sustainable emergency mental health services to areas of need



Ministry of Labour and Social Issues of The Republic of Armenia

Government House 3, Hanrapetutyan Street, Yerevan, 0010, Armenia

Tel: +374 10 565383

Web: mlsa.am



Pyunik Association for the Disabled

16 Building, Tsitsernakaberd Highway, Yerevan, 0082, Armenia

Tel: +374 10 560707 / +374 10 560817

Web: pyunic.org

Grants individuals with disabilities full participation in society, through physical, social, and psychological rehabilitation



Therapists for Armenia

Tel: +1 914 481 2866

Web: therapistsforarmenia.org

Enhancing the fields of occupational, physical, and speech therapy for Armenians worldwide



10. Oqni's vision



PSYCHOLOGICAL EMPOWERMENT:

MENTAL HEALTH & WELL-BEING

This **booklet** will be turned into an **app**. Both will include:

- fitness and mental health exercises for remote patients
- a comprehensive how-to for care of the prosthetics and covers
- access to a community and entities that can help in all aspects of their lives

Furthermore, a **book** will be published for professionals from diverse fields on:

- a detailed explanation of trauma-response, PTSD, stress-management, etc.
- a thorough study on the current environment, as to better understand the amputee in any given situation

PROSTHETIC COVERS

Design and produce empowering prosthetic covers that help the wearer gain confidence change the societal stigma by turning prosthetics into fashionable items of self-expression. Features of the prosthetic covers include:

- **Protective**: prosthetic the underlying prosthetic from damage and scratches
- **Aesthetic**, fashionable designs according to the amputees' preferences
- **Customizable** to individual patients sizes, body shape and design preferences thanks to 3D scans and 3D printing





PHYSICAL EMPOWERMENT:

BIONIC LEGS

Create an innovative, AI-driven, yet affordable bionic ankle with electrical propulsion that allows wearers to regain or transcend original mobility levels, especially in difficult environments, such as staircases or inclines. Features include:

- strength and feeling of having muscles, net positive energy return
- AI-powered, brain-controlled interface
- improved reintegration/embodiment of the artificial limb



EDUCATION & ENABLEMENT

TRAINING STUDENTS, WAR VETERANS, AND PROFESSIONALS; ENABLE ARMENIA'S PROSTHETICS INDUSTRY ADVANCE

oqni provides courses on topics surrounding prosthetics & amputees; i.e.:

- educational programs on covers and bionic prosthetics hardware & software since August 2021 at TUMO Labs with a total of 20+ students and 5+ experts
- ongoing training of lawyers at the American University of Armenia to work with war victims and amputees for witness testimony interviews



JOIN OUR FACEBOOK GROUP

You can now join our new Facebook group, where you will be able to meet the team and others alike! Within the group, you will be able to interact with our community, ask questions, give advice and much more.

www.facebook.com/groups/amputeegroup/



11. Glossary

AI - Artificial Intelligence is the study of how to produce machines that have some of the qualities that the human mind has, such as the ability to understand language, recognize pictures, solve problems, and learn

AKA - Above knee amputation

Bionic - Having particular physiological functions augmented or replaced by electronic or electromechanical components

BKA - Below knee amputation

Contracture - A permanent tightening of the muscles, tendons, skin, and nearby tissues that causes the joints to shorten and become very stiff. This prevents normal movement of a joint or other body part. Contractures may be caused by injury, scarring, and nerve damage, or by not using the muscles.

Dressing - Material used to cover impaired skin to protect it

Flashback - Recurrent and abnormally vivid recollection of a traumatic experience, sometimes accompanied by hallucinations.

Holistic - A treatment approach considering the whole person, taking into account mental and social factors, rather than just the physical symptoms.

Joint - The place where two or more bones are connected. Examples include the shoulder, elbow, knee, and jaw.

Mindfulness - A type of meditation based on the concept of being “mindful,” or having increased awareness, of the present. It uses breathing methods, guided imagery, and other practices to relax the body and mind and help reduce stress.

NGO - A non-governmental organisation is a non-profit organisation that operates independently of any government, typically one whose purpose is to address a social or political issue.

Phantom limb pain - The perception of pain or discomfort in a limb that is no longer there.

Prosthetic cover - A cover which helps the wearer gain confidence, changing the societal stigma by turning prosthetics into items of self-expression

Residual limb - The portion of the arm or leg remaining after an amputation.

Socket - The device that joins your residual limb to the prosthesis.

War veteran - A person that has served directly in combat in a war.



12. References

- [1] Selvam, P.S., Sandhiya, M., Chandrasekaran, K., Rubella, D.H. and Karthikeyan, S., 2021. Prosthetics for Lower Limb Amputation. Prosthetics and Orthotics. IntechOpen.
- [2] LimbsForLife. (2022). Caring for your residual limb. [online] Available at <<https://www.limbs4life.org.au/prosthetics/funding-for-prosthetic>>
- [3] Virani, A., Werunga, J., Ewashen, C. and Green, T., 2015. Caring for patients with limb amputation. Nursing Standard, 30(6), p.51.
- [4] Rossback, P. (2008). Tips for Taking Care of Your Limb. Amputee Coalition, 18(4), pp.38-39.
- [5] Ossur. (2022). Lower Limb Self-Care Tips. [online] Available at <<https://www.ossur.com/en-sg/prosthetics/prosthetic-users-info/information-for-lower-limb-amputees/life-without-limitations-lower-limb/self-care-tips>>
- [6] Orfit. (2022). Cleaning and Maintaining a Prosthetic Socket. [online] Available at <<https://www.orfit.com/blog/cleaning-and-maintaining-a-prosthetic-socket/>>
- [7] National Cancer Institute. (2021). NCI Dictionaries. [online] Available at <<https://www.cancer.gov/publications/dictionaries/cancer-terms/def/contracture>>
- [8] LaRaia, N. (2011). Preventing Contractures. Sola Prosthetics. [online] Available at <<https://www.solaprosthetics.com/preventing-contractures/>>
- [9] Jaegers, S.M., Arendzen, J.H. and de Jongh, H.J., 1995. Changes in hip muscles after above-knee amputation. Clinical orthopaedics and related research, (319), pp.276-284.
- [10] Le Feuvre, P. and Aldington, D., 2014. Know pain know gain: proposing a treatment approach for phantom limb pain. BMJ Military Health, 160(1), pp.16-21.
- [11] Saker, N.S., 2016. Effect of Limb Massage and Exercises on Phantom Limb Pain among Amputee Patients. Alexandria Scientific Nursing Journal, 18(2), pp.127-136.
- [12] Kim, S.Y. and Kim, Y.Y., 2012. Mirror therapy for phantom limb pain. The Korean journal of pain, 25(4), p.272.
- [13] Rossbach, P. (2022). Care of Your Wounds After Amputation Surgery. Amputee Coalition of America. First Step, 5(1) p.47
- [14] Physiopedia. (2022). Mirror Therapy. [online] Available at <https://www.physio-pedia.com/Mirror_Therapy>



- [15] Hayes, D.D. (2003). How to wrap an above-the-knee amputation stump. *Nursing 2020*, 33(1), p.70.
- [16] Hayes, D.D. (2003). How to wrap a below-the-knee amputation stump. *Nursing 2020*, 33(2), p.28.
- [17] Physiotherapy Inter regional Prosthetic Audit Group. (2004). Physiotherapy exercises following transfemoral (above knee) amputation. National Health Service. [online] Available at <<https://www.nbt.nhs.uk/sites/default/files/attachments/PIRPAG%20Exercises%20Transfemoral.pdf>>
- [18] Physiotherapy Inter regional Prosthetic Audit Group. (2004). [online] Physiotherapy exercises following transtibial (below knee) amputation. National Health Service. Available at <<https://www.nbt.nhs.uk/sites/default/files/attachments/PIRPAG%20Exercises%20Transtibial.pdf>>
- [19] International Committee of the Red Cross. (2008). Exercises for lower-limb amputees. [online] Available at <<https://www.icrc.org/en/publication/0936-exercises-lower-limb-amputees-gait-training>>
- [20] Smith S, Pursey H, Jones A, Baker H, Springate G, Randell T, Moloney C, Hancock A, Newcombe L, Shaw C, Rose A, Slack H, Norman C. (2016). 'Clinical guidelines for the pre and post-operative physiotherapy management of adults with lower limb amputations'. 2nd Edition. Available at <http://bacpar.csp.org.uk/>
- [21] Thompson, J. & Rewak, M. (2021). Amputation and limb loss. [online] Available at <https://therapistsforarmenia.org/amputation-and-limb-loss/>
- [22] Roşca, A.C., Baciş, C.C., Burtăverde, V. and Mateizer, A. (2021). Psychological Consequences in Patients With Amputation of a Limb. An Interpretative-Phenomenological Analysis. *Frontiers in Psychology*, 12.
- [23] Melinda Smith, M.A., Lawrence Robinson, and Jeanne Segal. (2021). PTSD in Military Veterans. Help Guide. [online] Available at <<https://www.helpguide.org/articles/ptsd-trauma/ptsd-in-military-veterans.htm>>
- [24] Lawrence Robinson, Robert Segal, M.A., Jeanne Segal, Ph.D., and Melinda Smith, M.A. (2021). Relaxation Techniques for Stress Relief. Help Guide. [online] Available at <<https://www.helpguide.org/articles/stress/relaxation-techniques-for-stress-relief.htm>>

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