

GERIATRIC PHYSICAL DISABILITY



By Group D (Section 2)

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Synopsis of Muscle System

- 1) Muscle system consists of skeletal, smooth and cardiac muscles.
- 2) Muscles attach to bones, internal organs and blood vessels to allow body movement, posture maintaining, circulate blood throughout the body and body heat production.
- 3) Muscle system composed of muscle fibers that undergo contraction and relaxation to be functioned.
- 4) Muscles have their own metabolism in order to function properly, however, there are several factors such as aging, healthy lifestyle (diet, exercise and more) and medication history may disturb the metabolism and from these, our body is facing health issues related to muscle system. For instance, knee pain, muscle atrophy, and muscle tense.
- 5) From the activities carried out, students are able to conduct an observation on muscle problems from elderly and lead students to suggest justified solutions and introduce relevant equipment to aid the problems.

1) Activity 1 : Video Recording and Problem Identification



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PROBLEM

Subject is having difficulties to stand up from sitting position. Subject reported, she has experienced long-term knee pain, tense at calf especially on left leg and sometimes pain at the hip area. Thus, subject also experienced abnormal walking style due to the pain initiated from the knee.

While standing, she feels painful on the hip, knee and tense at calf. She is having difficulties to stand up properly from sitting position. She may have muscle problems

AREA

Indoor - Living room

During sitting, subject cannot stay longer as she may feel numbness sitting for a long period of time.

1) Knee pain: The cartilage in the knee joint gradually becomes wear and tear as aging. The muscle and joint at knee part is becoming weak and this contribute to the pain experienced by subject and affect the movement of bending knees especially on left leg.

EXPLANATION

2) Hip pain: Tenderness & weaknesses of hip flexor may effect they flexibility of hip during any movement and causes the subject to feel painful. This is also due to the interconnected of muscles from hip area to knee and calf

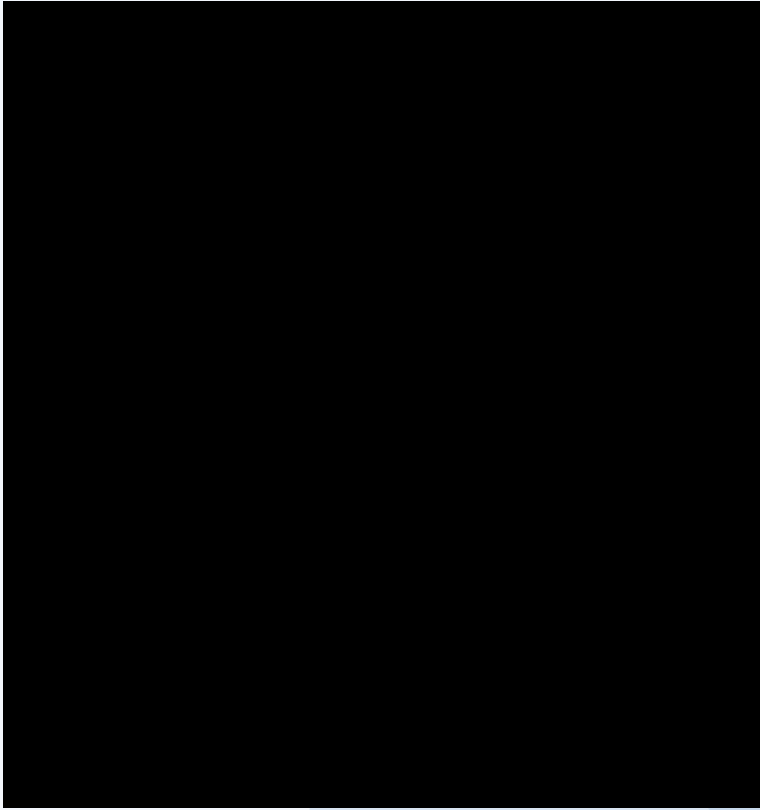
3) Tense at calf: Due to the joint problem, the left leg does not being forced to move, thus causing muscle atrophy where the muscle waste away as not much movement occur.

Moving from sitting position to standing position

MOVEMENT



Feedback



In this assignment, we are required to do two activities regarding muscle issues in elderly. Therefore, we have chosen an elderly from one of our group members to be our subject in this problem identification. A video of the elderly physical disabilities was recorded and from there, we extracted possible information to state the problem, movement involved, area of activity and provide further explanations. In the previous slide, we have stated all the details and describe the pains experienced by the subject based on anatomy of human body muscle.



2) Activity 2 : Problem Solving: Physical Exercise and Living Aids



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AIM

- To facilitate and sooth the bending movement.
- Reduce stress at related area when standing up.

Exercise



KNEE PAIN

Hamstring curl exercise is suitable for knee problems by targeting the **gastrocnemius** and **soleus** muscles of the calves, **biceps femoris**, **quadriceps** and **tibialis anterior**, **semitendinosus** and **semimembranosus** muscles. Hamstring curl is beneficial to strengthen and improve the flexibility along the hamstrings.

Living Aid

Mech

Prevent recurring strain **F(x)**

Knee is pressed against support. Since support is stiff enough, it can restrict the knee's motion range and taking some of the weight off of the joint

Below RM100 for moderate quality
(Shopee/Lazada/Watsons/Guardian) **Price**



Andrade's Kneeling Support



Patella Tendon Support

knee guard



HIP PAIN

Straight leg raise exercise involves **hip flexor (iliopsoas)**, **rectus femoris** and **rectus abdominis**. During exercise, **iliopsoas** flexes hip to raise the leg forward. The higher the raise of leg, the more active muscle becomes. Thus, it helps to strengthen hip flexor. **Rectus abdominis** contracts to stabilize spine and prevent the pelvis from moving. As for **rectus femoris** it crosses over the hip and knee joint which works with iliopsoas in hip flexion

to relax the tense or pain at hip area **F(x)**

Mech

cooling pack used able to relax the hip muscle and reduce the pain.

Below RM100
(SHOPEE/LAZADA/ZALORA) **Price**



cooling pillow



cooling pack



TENSE CALF



Calf raises, Heel & Calf stretch are the strengthening and stretching exercises that targets the muscles in lower leg, (also at the back of leg) specifically calf muscles including **Iliotibial Tract**.

mainly to support movement **F(x)**

Mech

force is applied to the stick and provides body support and balance.

Below RM100 (various depends on version) (below from Shopee) **Price**



narrow-base quad stick

Feedback

Explanation: *In related to the previous muscle problem that affects movement of the subject, we need to figure out physical exercises and living aid that will probably help to solve or reduce the problem. Our aim is to facilitate and soothe the bending movement as well as reduce stress at related areas when standing up. Subject experienced mainly knee pain and due to this, the subject also felt the pain at certain areas that may be related to knee area which are the calf, thigh and hip. Therefore, all the muscles that cross the joint at knee area contribute to knee pain. Basically, the muscles involved are calf muscle, quad muscle and hamstring. There are few physical exercises suggested to help the subject overcome or reduce the pain.*



Physical Exercises (examples of exercises)

For knee pain

Knee Pain 1 -

<https://youtu.be/aqkndmrDoCw>

Knee Pain 2 -

<https://youtu.be/88LR61WGVeQ>

Knee Pain 3 -

<https://youtu.be/01d29PK6Jb4>

For hip pain

Hip Pain 1 -

<https://www.youtube.com/watch?v=j42sLnoMkrA>

Hip Pain 2 -

<https://www.youtube.com/watch?v=jtZciPEaYzo>

For tense calf

Calf Pain 1 -

https://www.youtube.com/watch?v=XibsfBav_04

01

02

03

NOTES : We do not own any of the videos the were provided by all means. All of the credits go to the respective and rightful owners of the videos. Thanks to them!



For Knee Pain

1. Hamstring Curl

- Target hamstrings and glutes.
- Requires good core strength to keep upper body and hips steady.



marattmd.com

2. Leg Extension

- Using self body weight, rather than a weighted machine
- Strengthening quadriceps, helps keep added pressure off the knees.



livestrong.com

Steps of Exercises For Knee Pain

1. Hamstring Curl

• Standing Hamstring Curl

1. Stand facing a wall or use a chair for support. Your feet should be hip-width apart.
2. Lift one foot up, bend your knee, and raise your heel toward the ceiling. Go as far as you can, while keeping your upper body still and hips pointing forward.
3. Hold for 5 to 10 seconds.
4. Relax and lower to the starting position.
5. Do 2 to 3 sets of 10 repetitions for each leg.

• Lying Hamstring Curl

1. Lie down on your stomach and fold your arms in front of you.
2. Bend your knees, moving your heels toward your butt.
3. Return to starting position.
4. Complete 12 to 15 reps.

2. Leg Extension

1. Sit up tall in a chair.
2. Put your feet flat on the floor, hip-width apart.
3. Look straight ahead, contract your thigh muscles, and extend one leg as high as possible without raising your buttocks off the chair.
4. Pause, then lower to the starting position.
5. Do 2 to 3 sets of 10 repetitions for each leg.



For Hip Pain

1. Straight Leg Raise

- This moves target the hip flexor, quadriceps and also core muscles
- By doing this exercise, it can increase hip flexor, hip quadriceps and abdominal muscles



Jay Sullivan, Pinterest

2. Partial Squat

- This exercise target quadriceps and hip flexor
- It helps increase hip flexibility, quadriceps strength and hip flexor strength
- Improve ability to stand up properly from sitting position



Aliya Naumoff, Pinterest

Steps of Exercises For Hip Pain

1. Straight Leg Raise

1. Lie on the floor with your legs straight and arms by your sides.
2. Bend your right knee at a 90-degree angle. Plant your right foot on the floor.
3. Engage the quadriceps muscles in your left leg, inhale, and lift the left leg to about a 45-degree angle, keeping the leg straight.
4. Hold for three to five seconds.
5. Exhale and slowly lower the left leg to the starting position.
6. Repeat 10 times before switching legs.

2. Partial Squat

1. Bending your legs, push your butt back to a 45-degree angle, making sure not to position yourself in a full sit.
2. Extend your arms straight in front of you.
3. Pause for a second, then slowly raise your body back up by pushing through your heels. Make sure not to lock your knees when you return to a standing position.
4. Repeat.



For Tense Calf

1. Heel & Calf Stretch Raise

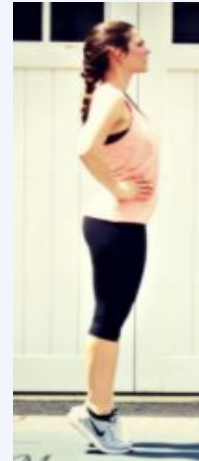
- This stretch targets the muscles in your lower leg, specifically your calf muscles.



Jay Sullivan, Pinterest

2. Calf Raises

- This exercise strengthens the back of your lower legs, which includes your calf muscles.



Trivia, Pinterest

Steps of Exercises For Tense Calf

1. Heel & Calf Stretch Raise

1. Stand facing a wall.
2. Place your hands on the wall and move one foot back as far as you can comfortably. Toes on both feet should be facing forward, heels flat, with a slight bend in your knees.
3. Lean into the stretch and hold for 30 seconds. You should feel the stretch in your back leg.
4. Change legs and repeat.
5. Do this stretch twice for both legs.

2. Calf Raises

1. Stand with your feet shoulder-width apart. Position yourself next to a wall or hold on to the back of a chair for support.
2. Lift both your heels off the ground so that you're standing on the balls of your feet.
3. Slowly lower your heels to the starting position. Control is important with this exercise for strengthening your calf muscles.
4. Do 2 to 3 sets of 10 repetitions.

Other Solutions

Vitamin D

F(x)

Helps absorbing calcium for building strong bones and have anti-inflammatory effects in relieving joint pain

Price

Below RM100 (Shopee, Lazada, Watsons, iHerb)

Risks

Subject may experience elevated blood levels which is extremely high blood levels when consuming greater than 100ng/ml as it is considered toxic.



REVIEWSECTOR.COM
Review Sector, Pinterest

Fish oil

Contains omega-3 fatty acids docosahexaenoic acid and eicosapentaenoic acid that have anti-inflammatory effects which reduces joint pain.

Below RM100 (Shopee, Lazada, Watsons, iHerb)

Taking more than 3 grams per day may keep blood from clotting, increase the chance of bleeding and reducing the immune system especially for elderly.



Tredasz, Pinterest

Magnesium

Can help with muscle tension

Below RM100 (Lazada, Watsons, iHerb, Fitlion Malaysia)

Subject will face irregular heartbeat, low blood pressure, confusion or slow breathing when consuming large amount that is more than 350mg daily.



Bustle.com, Pinterest

Risks Might Be Faced Using the Solutions

KNEE GUARD

The subject might experience **skin irritation or swelling (around the joint)** upon the wearing of knee guard. The skin under the guard might become red, hot and irritated if the knee guard fits poorly. This will cause the subject to feel uncomfortable wearing it for an extended period.

COOLING PILLOW/ COOLING PACK

The subject might have **ice burns on her skin**. Placing ice packs directly on the skin can cause ice burns and further leaving the ice pack over long periods of time can cause frostbite. To avoid this, always put the ice pack on the affected area while covering it using a cloth or towel or elastic bandage

NARROW-BASE QUAD STICK

By using this stick, it will require the subject to **walk a little more slowly**. Not only that, with its big base that consist of four sticks, the subject may experience **tripping hazards** which she can accidentally kick the bottom part of the sticks that could lead to loss of balance and fall.



Popkh, Pinterest

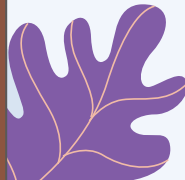


Lynda, Pinterest

HERE ARE 6 KNEE BRACES THAT CAN WORK BEST FOR PATELLAR TENDONITIS

- 1. FLOW 2 PACK KNEE PAIN RELIEF**
 - Can be worn with a compression sleeve
 - Easily adjustable
 - Can effectively relieve the pain caused by patellar tendonitis
- 2. ANATOMICAL DUAL PATELLA KNEE STRAP**
 - Helps to reduce pain brought about by patellar tendonitis and other knee-related injuries
 - Made from high quality materials that improve comfort
 - Perfectly hugs your knee and would stay fit on the knees regardless of how you move
- 3. McDAVID KNEE BRACE**
 - Can be customized according to your needs
 - Equipped with an adjustable strap that allows you to control the compression
 - Strong medical-grade Velcro
- 4. PRO-TEC ATHLETICS THE LIFT KNEE SUPPORT**
 - Available in four different sizes
 - Helps to alleviate all kinds of knee-related conditions
 - Made from Infrapatellar elastic strap
- 5. TECHWARE PRO KNEE COMPRESSION SLEEVE**
 - Available in 3 different sizes
 - Easy to fit
 - Equipped with 3D process technology
- 6. NOOVA KNEE BRACE FOR MENISCUS TEAR-OPEN PATELLA**
 - Breathable material
 - Durable
 - Extra U-shaped padding

Knee Products Guide, Pinterest



“REFLECTION”

This assignment focus on the study of muscle through real life case study. To be able to locate which part of the body that experience pain allows us to know the muscle that involved in that particular area, given that if the pain is muscle related problem. This case study made us realised that it is important for us to keep our body in check and to care for our physical health. For us youngsters, regular exercises and a good dietary help us a lot in maintaining a good muscle health. Although the probability of getting any muscle problems or pains are random, it is important for us to prevent any possibilities of getting one.



Thank You

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