

Pediatric Range of Motion Curriculum



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Table of Contents

Curriculum Structure..... 5

Lesson Structure..... 6

Lesson One – Range of Motion 7

 FOCUS: Empathy 8

 LEARN: Pediatric Range of Motion Slide Presentation..... 11

 REVIEW: Practice and Assessment..... 14

Sources 21

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Pediatric Range of Motion Curriculum

This curriculum and accompanying manikin will help students learn about completing Range of Motion exercises on a patient.

Curriculum Structure

The Pediatric Range of Motion Curriculum is composed of the following parts. Approximate times are included.

Lesson	Title	Approximate Time
One	FOCUS: Empathy	10 minutes
One	LEARN: Pediatric Range of Motion Slide Presentation	20 minutes
One	REVIEW: Practice and Assessment of Range of Motion	30 minutes
	Total	1 hour

Lesson Structure

Each lesson begins with a Lesson Overview, Lesson Objectives, and a Lesson at a Glance table which lists the lesson activities, materials required, suggested preparation steps, and approximate class time.

Lesson Sections

The actual lesson follows the overview, which will contain some of the sections described below.

FOCUS

Every lesson begins with a FOCUS activity intended to capture participants' attention. This may be in the form of a small or large class discussion, a game, a review of previous lesson information, or a demonstration. During this activity, participants are introduced to the topic of the lesson.

LEARN

The LEARN activity in each lesson varies in its presentation mode. It may be a slide presentation, group activity, or demonstration.

REVIEW

The majority of lessons end with a REVIEW activity intended to briefly review the lesson's key messages or main points.

Lesson One – Range of Motion

Lesson Overview

In this lesson, students will learn how to properly complete passive range of motion on a pediatric patient.

Lesson Objectives

After completing this lesson, participants will be able to:

- Utilize proper range of motion terminology
- Identify reasons for range of motion exercises
- Identify guidelines for safe range of motion
- Demonstrate proper passive range of motion techniques

Pre-Lesson Knowledge

- Anatomical terminology

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Pediatric Range of Motion (Focus on Empathy)</i> worksheet • <i>Pediatric Range of Motion (Focus on Empathy)</i> Instructor Resource	1. Print/photocopy <i>Pediatric Range of Motion (Focus on Empathy)</i> worksheet (one per participant)	10 minutes
LEARN	• <i>Pediatric Range of Motion</i> slide presentation • Pediatric Nursing Manikin	1. Prepare <i>Pediatric Range of Motion</i> slide presentation for viewing	20 minutes
REVIEW	• <i>Pediatric Range of Motion Check-Off</i> Instructor Resource • <i>Pediatric Range of Motion Check-Off</i> worksheet • <i>Pediatric Range of Motion Quiz</i> • <i>Pediatric Range of Motion Quiz – Answer Key</i> • Pediatric Nursing Manikin - Supplies: • Bath blanket • Hand sanitizer or access to soap/water	1. Print/photocopy <i>Pediatric Range of Motion Check-Off</i> worksheet (one per participant) 2. Get the supplies ready for the lesson 3. Print/photocopy <i>Pediatric Range of Motion Quiz</i> (one per participant)	30 minutes

Instructor Note: For SUMMARIZE activities, the instructor may choose to have students complete both or one of the two activities. The FOCUS activity may also be completed prior to class.

Lesson One – Range of Motion

FOCUS: Empathy

10 minutes

Purpose:

To help students develop awareness of patient-focused care.

Materials:

- *Pediatric Range of Motion (Focus on Empathy) worksheet*
- *Pediatric Range of Motion (Focus on Empathy) Instructor Resource page*

Facilitation Steps:

1. Distribute the *Pediatric Range of Motion (Focus on Empathy) worksheet* prior to or at the start of the class.
2. Have the *Pediatric Range of Motion (Focus on Empathy) Instructor Resource page* available.
3. Have students read through the information and complete the worksheet.
4. Have students pair up upon completion and share answers.

Name: _____ Class: _____

Pediatric Range of Motion (Focus on Empathy)

READ the following:

You are a parent of a 3-year-old-child who is hospitalized due to a traumatic fall. The child has lost function and sensation of their right side. Your child can communicate, but their speech is slurred. The television is on a news channel. The nursing assistant knocks and enters the room. They introduce themselves to the child. “Hi, my name is Greg.” Greg proceeds to uncover the child’s arm and starts to exercise it. They continue to move your right extremities as they watch the news. They don’t say anything to you and rarely looks at you or your child. They seem distracted and in a rush to complete the exercises.

REFLECT on the situation

How do you feel while Greg is exercising your child?

What could Greg say to make the experience more enjoyable and more patient focused?

SHARE your thoughts with a peer

Pediatric Range of Motion (Focus on Empathy) Instructor Resource

READ the following:

You are a parent of a 3-year-old-child who is hospitalized due to a traumatic fall. The child has lost function and sensation of their right side. Your child can communicate, but their speech is slurred. The television is on a news channel. The nursing assistant knocks and enters the room. They introduce themselves to the child. “Hi, my name is Greg.” Greg proceeds to uncover the child’s arm and starts to exercise it. They continue to move your right extremities as they watch the news. They don’t say anything to you and rarely looks at you or your child. They seem distracted and in a rush to complete the exercises.

REFLECT on the situation

How do you feel while Greg is exercising your child?

Ignored, like an object or a task to complete, Greg does not care about you or your child

What could Greg say to make the experience more enjoyable and more patient focused?

Focus on you and your child rather than the television, could explain what he is doing, talk to you or your child about how you are feeling

***Point out to students that it is more important to be patient focused than task focused*

SHARE your thoughts with a peer

Lesson One – Range of Motion

LEARN: Pediatric Range of Motion Slide Presentation

20 minutes

Purpose:

Participants will learn about considerations during pediatric range of motion exercises and the proper procedure surrounding them.

Materials:

- *Pediatric Range of Motion* slide presentation
- Pediatric Nursing Manikin

Facilitation Steps:

1. Share the following information with students as you show the slide presentation.

Slide 1: Introduction Slide

Slide 2: In healthcare, we attempt to maintain or restore mobility in order to decrease the side effects of immobility. Common causes of altered mobility include musculoskeletal conditions such as fractures or joint replacement surgeries. Also, neurological conditions such as head injuries and strokes can alter a patient's strength and their sensation of the extremities. Mobility can also be prescribed in cases of bedrest or decreased activity.

Slide 3: There are many complications related to immobility. In fact, it has negative consequences for virtually all body systems.

Depending on student questions, the instructor may have to explain how immobility causes certain conditions.

Slide 4: Many older adults have a decline in physical ability and health. Prior to implementing any exercise, it is important to assess the client's current activity level, strength level and tone of muscles, current joint or muscle limitations, and their response to

activities such as fatigue or muscle aches. It is also crucial to only complete exercises that are approved by the provider, especially if there is an existing heart or lung disease. Medications can also place the client at risk for safety concerns, such as falls, if they have a side effect like dizziness or fatigue.

Slide 5: Range of motion (ROM) exercises are the full movement of joints within the body. There are three main types of range of motion exercises. Active ROM is when the client can perform the exercises independently. Passive ROM is when a caregiver needs to perform the exercises on the client (an example of this is if the client is immobile). Active assisted ROM is when the ROM exercises are performed by the client, but supervised by a caregiver (an example of this is incorporating ROM exercises with common activities of daily living).

Slide 6: Performing ROM exercises can be delegated to any caregiver if they know the proper procedure and feel comfortable completing the task. Clients with spinal cord injuries or trauma usually require professional staff, such as nurses or physical therapists, to complete ROM for safety purposes.

Slide 7: When completing ROM on a client or teaching a client how to complete active ROM, there are a few safety considerations. Exercises should be performed slowly for active and passive ROM. Each joint should be supported during passive ROM, and the caregiver should not push the joint past the point of resistance. ROM exercises should be stopped if there is fatigue or pain reported. Clean gloves are optional in most cases, but may be necessary where skin conditions are present.

Slide 8: After introducing yourself, providing privacy, washing your hands, and identifying

your client, explain the ROM procedure, including rationales for exercising. It is sometimes necessary to demonstrate each exercise before completing it. Educating the client can be throughout the process. Make sure the client is comfortable; in some cases, clients may have to be pre-medicated. Confirm any joint or condition limitations with the client prior to starting.

How would you explain ROM to a child?

Slide 9: Place the client in a sitting or lying position. It is proper practice to start at the head and exercise each joint down to the toes, repeating each movement five times. Provide for privacy as you complete this skill. Make sure each joint is supported. For joints in the middle of an extremity, hold the distal and proximal areas next to the joint. For smaller joints, hold the distal portion of the extremity in the palm of your hand.

Demonstrate how to support different joints. Have students practice on each other.

Slide 10: Have students perform each active ROM as they are discussed. Remind students to complete these slowly and only to the point of resistance.

- Flexion: Bring chin to chest
- Extension: Return head to upright position
- May hyperextend head back but no more than 10°
- Lateral flexion: Tilt head to each side
- Rotation: Turn head in a circular movement

Slide 11: Have students perform each active ROM as they are discussed. Remind students to complete these slowly and only to point of resistance. Repeat on both sides.

- Flexion: Raise arm forward to above head
- Extension: Return arm to side
 - May hyperextend back no more than 60°
- Abduction: Raise arm from side to above head with palm away from head
- Adduction: Return arm to side
 - May go past side to center of body if able
- External rotation: Move arm 90° from body; with elbow flexed, move lower arm upward, lateral to head

- Internal rotation: Return lower arm to a downward position
- Circumduction: Move arm in full circle

Slide 12: Have students perform each active ROM as they are discussed. Remind students to complete these slowly and only to point of resistance. Repeat on both sides.

- Flexion: Bend elbow upwards, bringing palm to shoulder
- Extension: Straighten elbow, thus lowering hand
- Supination: Turn lower arm so palm is up
- Pronation: Turn lower arm so palm is down

Slide 13: Have students perform each active ROM as they are discussed. Remind students to complete these slowly and only to point of resistance. Repeat on both sides.

- Flexion: Move palm downwards toward inner forearm
- Extension: Return hand to flat
 - May hyperextend back no more than 90°
- Radial deviation: Bend wrist toward thumb side
- Ulnar deviation: Bend wrist laterally

Slide 14: Have students perform each active ROM as they are discussed. Remind students to complete these slowly and only to point of resistance. Repeat on both sides.

- Flexion: Make a fist
 - For thumb, move across palm
- Extension: Straighten fingers
 - May hyperextend fingers no more than 60°
 - For thumb, move away from palm
- Abduction: Spread fingers apart
- Adduction: Bring fingers together
- Opposition: Touch thumb to each finger on same hand

Slide 15: Have students perform each active ROM as they are discussed. Remind students to complete these slowly and only to the point of resistance. Repeat on both sides.

- Flexion: Move leg forward and up
- Extension: Move leg back in line with other leg
- May hyperextend no more than 50°

Pediatric Range of Motion Curriculum

- Abduction: Move leg laterally away from body
- Adduction: Return leg to center
- Internal rotation: Turn leg and foot inward
- External rotation: Turn leg and foot outward
- Circumduction: Move leg in a circle

Slide 16: *Have students perform each active ROM as they are discussed. Remind students to complete these slowly and only to point of resistance. Repeat on both sides.*

- Flexion: Bend knee bringing heel towards buttocks
- Extension: Extend knee back to original position

Slide 17: *Have students perform each active ROM as they are discussed. Remind students to complete these slowly and only to point of resistance. Repeat on both sides.*

- Dorsal flexion: Point toes upward
- Plantar flexion: Point toes downward
- Inversion: Turn sole of foot inwards medially
- Eversion: Turn sole of foot outwards
- Flexion: Curl toes down
- Extension: Straighten toes
- Abduction: Spread toes apart
- Adduction: Bring toes together

Slide 18: Make sure you reassess your client for any pain or fatigue. Provide for safety, such as lowering bed if raised and placing the call light within reach. Most ROM documentation is found under Activities of Daily Living (ADLs) or a patient care chart. Any abnormal findings should be reported to the nurse or provider.

Slide 19: Closing Slide

Lesson One – Range of Motion

REVIEW: Practice and Assessment

30 minutes

Purpose:

Participants will practice range of motion on a pediatric model and then complete a quiz to assess mastery.

5. Have students self-check or peer check their answers as you share them from the *Pediatric Range of Motion Quiz - Answer Key*.

Materials:

- *Pediatric Range of Motion Check-Off Instructor Resource*
- *Pediatric Range of Motion Check-Off* worksheet
- Pediatric Nursing Manikin
- *Pediatric Range of Motion Quiz*
- *Pediatric Range of Motion Quiz - Answer Key*

Supplies:

- Bath blanket
- Hand sanitizer or access to soap and water

Facilitation Steps:

1. Give students the *Pediatric Range of Motion Check-off* worksheet
2. Access the *Pediatric Range of Motion Check-Off Instructor Resource* page. Following the steps on the check-off page, demonstrate passive range of motion on the manikin.
3. Following the steps on their *Pediatric Range of Motion Check-Off* student resource page, have students practice passive range of motion on the manikin.
4. Hand out the *Pediatric Range of Motion Quiz* to students. Give them a couple of minutes to complete it.

Pediatric Range of Motion Check-Off

Instructor Resource

PREPARATION:

Supplies:

- Bath blanket
- Hand sanitizer or access to soap and water

After demonstration, have students practice passive range of motion on the pediatric manikins using the following steps:

Optional: Evaluate the student's ability to complete range of motion using the following steps. You may score via points or satisfactory/unsatisfactory.

1.	Gather supplies needed (bath blanket)	
2.	Knock, enter room, and provide for privacy	
3.	Identify yourself with name and title (nurse, aide, etc.)	
4.	Wash your hands with sanitizer or soap and water	
5.	Identify client by asking name and date of birth; verify this information	
6.	In an age-appropriate way, explain the procedure to the client and ask if they have any pain or limitations	
7.	Position client in supine or sitting position	
8.	Neck ROM • Flexion: Bring chin to chest • Extension: Return head to upright position • Lateral flexion: Tilt head to each side • Rotation: Turn head in a circular movement	
9.	Shoulder ROM • Flexion: Raise arm forward to above head • Extension: Return arm to side • Abduction: Raise arm from side to above head with palm away from head • Adduction: Return arm to side ○ May go past side to center of body if able • Simulate external rotation: Move arm to 90° from body; with elbow flexed, move lower arm upward, lateral to head • Internal rotation: Return lower arm to a downward position • Circumduction: Move arm in full circle	
10.	Elbow ROM • Flexion: Bend elbow upwards bringing palm to shoulder • Extension: Straighten elbow thus lowering hand	

11.	Simulate Forearm ROM • Supination: Turn lower arm so palm is up • Pronation: Turn lower arm so palm is down	
12.	Simulate Wrist ROM • Flexion: Move palm downwards toward inner forearm • Extension: Return hand to flat • Radial deviation: Bend wrist toward thumb side • Ulnar deviation: Bend wrist laterally	
13.	Simulate Fingers and Thumb ROM • Flexion: Make a fist ○ For thumb, move across palm • Extension: Straighten fingers ○ For thumb, move away from palm • Abduction: Spread fingers apart • Adduction: Bring fingers together • Opposition: Touch thumb to each finger on same hand	
14.	Repeat on other side	
15.	Hip ROM • Flexion: Move leg forward and up • Extension: Move leg back in line with other leg • Abduction: Move leg laterally away from body • Adduction: Return leg to center • Internal rotation: Turn leg and foot inward • External rotation: Turn leg and foot outward • Circumduction: Move leg in a circle	
16.	Knee ROM • Flexion: Bend knee bringing heel towards buttocks • Extension: Extend knee back to original position	
17.	Simulate Ankle, Feet, and Toe ROM • Dorsal flexion: Point toes upward • Plantar flexion: Point toes downward • Inversion: Turn sole of foot inwards medially • Eversion: Turn sole of foot outwards • Flexion: Curl toes down • Extension: Straighten toes • Abduction: Spread toes apart • Adduction: Bring toes together	
18.	Repeat on other side	
19.	Provide privacy with bath blanket throughout	
20.	Reassess for pain and provide for client comfort and safety	
21.	Wash hands and document procedure	
	Total	

Pediatric Range of Motion Check-Off

Practice range of motion on the pediatric manikin using the following steps:

Gather supplies needed (bath blanket)
Knock, enter room, and provide for privacy
Identify yourself with name and title (nurse, aide, etc.)
Wash your hands with sanitizer or soap and water
Identify client by asking name and date of birth; verify this information
In an age-appropriate way, explain the procedure to the client and ask if they have any pain or limitations
Position client in supine or sitting position
Neck ROM • Flexion: Bring chin to chest • Extension: Return head to upright position • Lateral flexion: Tilt head to each side • Rotation: Turn head in a circular movement
Shoulder ROM • Flexion: Raise arm forward to above head • Extension: Return arm to side • Abduction: Raise arm from side to above head with palm away from head • Adduction: Return arm to side ○ May go past side to center of body if able • Simulate external rotation: Move arm to 90° from body; with elbow flexed, move lower arm upward, lateral to head • Internal rotation: Return lower arm to a downward position • Circumduction: Move arm in full circle
Elbow ROM • Flexion: Bend elbow upwards bringing palm to shoulder • Extension: Straighten elbow thus lowering hand
Simulate Forearm ROM • Supination: Turn lower arm so palm is up • Pronation: Turn lower arm so palm is down
Simulate Wrist ROM • Flexion: Move palm downwards toward inner forearm • Extension: Return hand to flat • Radial deviation: Bend wrist toward thumb side • Ulnar deviation: Bend wrist laterally
Simulate Fingers and Thumb ROM • Flexion: Make a fist

○ For thumb, move across palm • Extension: Straighten fingers ○ For thumb, move away from palm • Abduction: Spread fingers apart • Adduction: Bring fingers together • Opposition: Touch thumb to each finger on same hand
Repeat on other side
Hip ROM • Flexion: Move leg forward and up • Extension: Move leg back in line with other leg • Abduction: Move leg laterally away from body • Adduction: Return leg to center • Internal rotation: Turn leg and foot inward • External rotation: Turn leg and foot outward • Circumduction: Move leg in a circle
Knee ROM • Flexion: Bend knee bringing heel towards buttocks • Extension: Extend knee back to original position
Simulate Ankle, Feet, and Toe ROM • Dorsal flexion: Point toes upward • Plantar flexion: Point toes downward • Inversion: Turn sole of foot inwards medially • Eversion: Turn sole of foot outwards • Flexion: Curl toes down • Extension: Straighten toes • Abduction: Spread toes apart • Adduction: Bring toes together
Repeat on other side
Provide privacy with bath blanket throughout
Reassess for pain and provide for client comfort and safety
Wash hands and document procedure

Name: _____

Class: _____

Pediatric Range of Motion Quiz

Sit and complete the following motions. Match the ROM terms to the correct movement. Terms may be used more than once. After each motion, return to a standard sitting position before completing the next motion.

A	Abduction
B	Adduction
C	Circumduction
D	Dorsiflexion
E	Eversion
F	Extension
G	Flexion
H	Inversion
I	Opposition
J	Plantar Flexion
K	Pronation
L	Rotation
M	Supination

- _____ Shake your head “no”
- _____ Reach for an object to your right with your right arm and hand
- _____ Point your toes down lifting your heels off of the floor
- _____ Put your chin to your chest
- _____ Turn the sole of your left foot so that it faces the right
- _____ Make a fist
- _____ Place one hand palm up
- _____ Point your toes up to the ceiling
- _____ Kick one leg out and hold straight
- _____ Move one arm in a complete circle
- _____ Place one hand palm down
- _____ Turn the sole of your right foot so that it faces outward laterally
- _____ Touch your thumb to each finger of the same hand
- _____ Bring your fingers together

Pediatric Range of Motion Quiz – Answer Key

Instruct the students sit and complete the following motions. Match the Range of Motion terms to the correct movement. Terms may be used more than once. After each motion, instruct students to return to a standard sitting position before completing the next motion.

A	Abduction	L Shake your head “no”
B	Adduction	A Reach for an object to your right with your right arm and hand
C	Circumduction	J Point your toes down lifting your heels off of the floor
D	Dorsiflexion	G Put your chin to your chest
E	Eversion	H Turn the sole of your left foot so that it faces the right
F	Extension	G Make a fist
G	Flexion	M Place one hand palm up
H	Inversion	D Point your toes up to the ceiling
I	Opposition	F Kick one leg out and hold straight
J	Plantar Flexion	C Move one arm in a complete circle
K	Pronation	K Place one hand palm down
L	Rotation	E Turn the sole of your right foot so that it faces outward laterally
M	Supination	I Touch your thumb to each finger of the same hand
		B Bring your fingers together

Sources

Assessment Technologies Institute. (2010). Ambulation, Transferring, and Range of Motion. Retrieved from:

http://www.atitesting.com/ati_next_gen/skillsmodules/content/ambulation/equipment/range-of-motion.html

Crawford, A. & Harris, H. (2016). Caring for adults with impaired physical mobility. *Nursing*. 46 (12). 36-41. Retrieved from:

http://journals.lww.com/nursing/Fulltext/2016/12000/Caring_for_adults_with_impaired_physical_mobility.10.aspx

Perry, A., Potter, P., & Ostendorf, W. (2017). *Clinical Nursing Skills and Techniques*. 9th Edition. Publisher: Mosby, Inc.