

Serial Casting Competency Questions

Prepared by Terry Sink, PT, PCS WFMBC Outpatient Pediatric Therapy

1. What should be the clinician's first step when prescribing casts as part of the intervention strategy? (From Home Study Course Orthopedics Section questions)
 - a. Set goals for casting intervention
 - b. Evaluate the client thoroughly
 - c. Understand the likely impact of the casting process
 - d. Ensure the goals of the intervention are realistic.

2. On the attached sheets are the medial and lateral views of the foot.
 - a. Name the 3 divisions of the foot used in describing motion and alignment from posterior to anterior foot: 1. _____ 2. _____ 3. _____
 - b. Set (1) Name the bones of the foot (can group bones of the same category by drawing connector lines). (Hint total 26 bones): See drawing to name.
 - c. Set (2) Medial View - Label the joints marked
 - d. Set (1) Designate by circling or listing what makes up the first "Ray" of the foot.

3. Name the 5 attributes of walking that make for most efficient gait pattern (SC Power Point)
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____

4. Identify the areas of the foot that need padding when preparing for serial cast application.

5. List the planes of motion that are present in the ankle foot complex
 - a. _____
 - b. _____
 - c. _____

6. Describe the motion at each of these joints:
 - a. Talocalcaneal – _____
 - b. Subtalar- _____
 - c. Midtarsal joint – _____
 - d. First ray – _____

7. The consequences of limited DFL are: T or F Ref 4 Cusick pg 5
_____ Pronation

Serial Casting Competency Questions

Prepared by Terry Sink, PT, PCS WFMBC Outpatient Pediatric Therapy

- _____ Premature heel lift
 - _____ Abduction of the entire foot to avoid DFL
 - _____ Genu recurvatum in severe cases
 - _____ Knee flexion in gait to reduce tension on gastroc (a 2 joint muscle)
8. When using the cast saw which motion is recommended:
- a. Push inward and pull upward
 - b. Cut into the cast until resistance is not felt and slowly move the blade down and up through the cast moving along the lateral and medial sides of the cast
9. When considering posting which of these is correct:
- a. Providing support to parts of the foot to enhance stability of that section of the foot when weight bearing.
 - b. Bringing "surface" up to the section of the foot to maintain neutral midfoot alignment
 - c. Can be done at the hind or forefoot
 - d. All of the above
10. Contraindications for serial casting include are: True or False
- _____ Open wound area
 - _____ Rigid joint structure – long standing contracture of over 3 years
 - _____ Decreased or limited mobility of the Talocalcaneal joint
 - _____ Swelling
 - _____ Children under 18 months
 - _____ Presence of a bony obstruction or abnormality
 - _____ Without neuromuscular blockade
 - _____ Heterotopic Ossification
 - _____ Patient unable to tolerate casting process
 - _____ Hypertension or concern with intracranial pressure
11. Benefits of casting include:
- a. Optimize alignment of mechanical and muscular components of movement
 - b. Can target proximal joints for strengthening and function while distal joint in more optimal alignment
 - c. Target learning of motor control of more proximal joints
 - d. All of the Above
12. Give 3 examples of exercises that may be provided for patient while in casts for ambulatory child.
- a. _____
 - b. _____

Serial Casting Competency Questions

Prepared by Terry Sink, PT, PCS WFMBC Outpatient Pediatric Therapy

c. _____

13. Give 3 examples of exercise post casting to develop ankle and foot motion and balance adaptations.

a. _____

b. _____

c. _____

14. What Plan/instructions would be given to parent regarding Skin Care and recognizing concerns while in casts:

15. True or False

_____ Casting is Facilitative (25)

_____ Casting is inhibitory (25)

_____ The resistance felt at the end range of a lengthened mm with spasticity may result from the resistance borne by subcellular proteins and extracellular connective tissue and NOT from activation of spasticity. (25)

_____ The length tension curve for children with CP was found to be shifted Leftward due to difference in angle in the range where the PF peak force occurs (11)

_____ After casting there was reported a Rightward shift in length tension curve where the peak PF force angle changed post casting – with a relocation of the of the peak triceps surea strength in greater DFL range. (11)

_____ Post casting there was a change in co-activation of the ankle muscles (11)

_____ Goals of serial casting should surround activity limitations in daily life, care giver, work, and quality of life factors, enhance function and participation. (APTA – LE Orthotic Intervention (Pediatric Home Study Course)

_____ Normal Movement provides stimulus for normal muscle length Herbert 1988

_____ Two components of Soft Tissue Hypoextensibility are Hyperactivity and Dysfunction of Tropic Growth in the muscle (27, 28)

_____ Stress relaxation is from constant position of length held (25)

Serial Casting Competency Questions

Prepared by Terry Sink, PT, PCS WFMBC Outpatient Pediatric Therapy

_____ Strain relaxation explains why there is immediate increase in PROM in response to therapeutic stretch from a constant position held (25)

_____ Need 8-12 degree motion at the STJ in gait (4)

_____ In closed chain function see hindfoot move into 4-6 degrees eversion (4)

_____ "Fore foot rule" forefoot always seeks the ground (4)

_____ MTP joint needs 65-75 deg of hyperextension in typical locomotion (4)

_____ At PO the 1st ray Dorsiflexes to stabilize the forefoot on the ground as MTP jt hyperextends (PFL 4)

_____ Serial casts have been shown to increase heel strike in a patient/client with Idiopathic toe walking APTA pediatric Home Study Chapter 9

_____ Soft tissue shortening that does not change after two Serial casting consider Trophic changes in the muscle vs. hyperactivity causing the shortening.

16. Lever Arm Dysfunctions includes all but:

- a. Malrotation
- b. Efficient transfer of energy across foot
- c. Loss of stable fulcrum
- d. Loss of boney rigidity
- e. Lever Arm Shortening

17. Name 3 impairments that are neurological or musculoskeletal that have been found in Children with CP or neuromotor impairments

- a. _____
- b. _____
- c. _____

18. Match the following considerations to the correct Biomechanical category

- a. Soft Tissue OR b. Joint Architecture
 - i. MM/Tendon _____
 - ii. Architecture of the mm _____
 - iii. Trophic changes of mm leading to functional changes of mm _____
 - iv. Alignment _____
 - v. Limitation in joint motion _____
 - vi. Transverse plane issues _____

Serial Casting Competency Questions

Prepared by Terry Sink, PT, PCS WFMBC Outpatient Pediatric Therapy

- vii. Boney growth _____
19. Place a P for Pronation or S for Supination beside the description matching the motion/position that go with the go position :
- Locking _____
- Subtalar jt in closed pack _____
- Adaptability to terrain _____
- Shock absorber _____
- Unlocking _____
- Facilitates knee flexion _____
- Facilitates knee extension _____
- Occurs at HS and later Toe Off _____
- Occurs with weight acceptance _____
20. Indications for casting include all except
- Soft contracture
 - Less than 5 degree past Neutral DFL with STJ neutral
 - Strong resistance through full range regardless of activity level
 - Static contracture
 - Malalignment due to hypoextensibility
21. During casting process which joint motion of the ankle/foot would be the last to be positioned
- STJ
 - Midtarsal joint
 - Forefoot
 - DFL at Talocalcaneal
22. During casting if the Talocalcaneal joint lacks mobility to Neutral or greater with the STJ and midfoot in neutral orientation how would the foot be casted?
- Bring Ankle into at least 90 degs to allow weight bearing onto the heel
 - Post the hind foot at a point to maintain rear and forefoot alignment and allow heel contact with talocalcaneal joint stabilized in PFL as needed
 - Decide that the child is not a candidate for casting
 - Pronate the foot to the heel down on the surface while casting

Serial Casting Competency Questions

Prepared by Terry Sink, PT, PCS WFMBC Outpatient Pediatric Therapy

23. If parent calls you with concern that child is not sleeping after 2 nights and complaining of discomfort what would be your course of action?
