1. Which is not a common complication of tibial eminence fracture?

   a. Delayed union
   b. Extension block
   c. ACL laxity
   d. Refracture

2. Of the various risk factors associated with DDH, the most prevalent risk factor is:

   a. A positive family history
   b. Oligohydramnios
   c. Congenital muscular torticollis
   d. Frank breech presentation
   e. Swaddling the hips in extension and adduction

3. Klippel-Feil syndrome is associated with all of the following except

   a. Sprengel's anomaly
   b. Scoliosis
   c. Renal Anomalies
   d. Developmental dysplasia of the hip
   e. Cardiac anomalies

4. The most important element to prevent malalignment and degenerative joint disease in early onset tibia vara (Blount’s disease) is:

   a. Early surgery – before age 5
   b. Correction of the deformity before Langenskiold Stage V or VI
   c. Correction or Slight Overcorrection of the mechanical axis
   d. Early diagnosis of the condition (age 2) by means of the Metaphyseal Diaphyseal angle
   e. All of the above

5. The most important test to determine if a child has septic arthritis is:

   a. CBC
   b. ESR
   c. Aspiration of the Joint
   d. Bone Scan
   e. Ultrasound

6. The best surgical procedure for a 7 yrs old patient with an osteosarcoma of the distal femur is:

   a. Mid-thigh amputation
   b. Rotationplasty
   c. Growing endoprosthesis
   d. Distal femoral allograft
   e. Hip disarticulation

7. Congenital dislocation of the knee is associated with one of the following:

   a. Metatarsus adductus
   b. DDH
   c. Fibular hemimelia
   d. Phagiocephaly

8. Complications with the Pavlic harness include:

   a. Occlusion of the femoral artery
   b. Femoral nerve palsy
   c. Chondrolysis
   d. Knee flexion contracture
9. Aspiration of an area of suspected osteomyelitis should be:
   a. Delayed until after the bone scan
   b. Delayed until after the MRI scan
   c. Done only if the patient does not respond to antibiotics
   d. Done immediately

10. The best imaging study for the infant hip is:
   a. A radiograph
   b. An ultrasound
   c. CT
   d. MRI

11. Congenital pseudoarthrosis has a poorer prognosis if:
   a. The fracture occurs later
   b. The pseudoarthrosis is not associated with neurofibromatosis
   c. The tibia only is involved
   d. The pseudoarthrosis is the dysplastic type
   e. The pseudoarthrosis is in the diaphysis

12. Which answer below correctly describes the maneuver used to manipulate an idiopathic clubfoot in the Ponseti treatment method?
   a. Pronation-abduction of the forefoot with counter pressure on the distal end of the calcaneus
   b. Supination-abduction of the forefoot with counter-pressure on the distal end of the calcaneus
   c. Abduction of the forefoot with counter pressure on the neck of the talus
   d. Pronation-abduction of the forefoot with counter-pressure on the neck on the talus

13. The common mechanism of a tibial tubercle fracture is:
   a. Chronic stress on Osgood-Schlatter’s lesion
   b. Twisting injury during sports
   c. Muscle contraction against a fixed knee
   d. Fall onto knee from bicycle

14. In a 4-month-old infant with DDH the most common clinical finding is:
   a. A positive Ortolani maneuver
   b. A positive Barlow provocative test
   c. Limited abduction
   d. A flexion contracture
   e. Increased internal rotation

15. Metatarsus primus varus is identified by an increased
   a. Hallux valgus angle
   b. Intermetatarsal angle
   c. Distal metatarsal articular angle
   d. Talocalcaneal angle
   e. Interphalangeal angle

16. Regarding the embryology and ossification of the dens which of the following statements is true?
   a. The body of the odontoïd originates from the pro-atlas
   b. The odontoïd and the ring oc C2 originate from the same somites
   c. The syncondrosis between the odontoïd and the body of C2 fuses at age 3
   d. Complete absence of the odontoïd is rare
   e. The body of the odontoïd has one ossification center

17. The incidence of bilateral involvement of SCFE is:
   a. 10 %
   b. 25 – 50 %
   c. 60 – 70 %
   d. 80 %
   e. 100 %
18. Which of the following is not a valid predictor in Septic Arthritis of the Hip:
a. Fever
b. Loss of Motion of the Hip
c. Inability to bear weight
d. WBC > 12,000
e. ESR > 40

19. The most frequent malignant bone tumor in immature skeleton is:
a. Ewing sarcoma
b. Chondrosarcoma
c. Wilms sarcoma
d. Osteosarcoma
e. Fibrosarcoma

20. The primary deformity in congenital knee dislocation is:
a. Short femur
b. Tight anterior cruciate
c. Contracted quad
d. Lax posterior capsule

21. The most common reason for a closed reduction of the hip to fail is:
a. Contracture of the adductors
b. Tight medical capsule from indentation of the iliopsoas tendon
c. Obstruction from the ligamentum teres
d. Obstruction from the limbus

22. Osteomyelitis occurs most commonly in the metaphysial region of bone because:
a. This is the most commonly injured area
b. The blood flow through this area slows
c. The bone is mostly cancellous
d. This is most rapidly growing area

23. Which answer below most correctly describes Ponseti treatment protocol for unilateral idiopathic clubfoot after the Achilles tenotomy?
a. Casting for 8 weeks, then Ankle Foot Orthosis for 2 years
b. Casting for 3 weeks, then Foot Abduction Orthosis 23 hours per day for 3 months, then Foot Abduction Orthosis at night for 2-4 years
c. Casting for 6 weeks, then Foot Abduction Orthosis at night for 2-4 years, and Ankle Foot Orthosis while walking for 2-4 years
d. Casting for 3 weeks, then physiotherapy for 3 months to encourage ankle motion, then bilateral Knee Ankle Foot Orthosis at night to maintain abduction and external rotation

24. The illustration of the following figure is best described as the following:
a. Talo-calcaneal Middle Facet fibrocartilaginous coalition
b. Calcaneonavicular Bar
c. Subtalar bony bridge
d. Anterior Facet Talus Dominant Subtalar Coalition

25. Contractures in Cerebral Palsy are most often the result of:
a. Changing central motor control
b. Differential growth of muscle and bone
c. Chronic soft-tissue injury with therapy routines
d. Muscle weakness

26. The skewfoot deformity is characterized by:
a. Forefoot adductus, lateral shift of the midfoot, and hindfoot varus
b. Forefoot adductus, medial shift of the midfoot, and hindfoot varus
c. Forefoot adductus, lateral shift of the midfoot, and hindfoot valgus
d. Forefoot abductus, medial shift of the midfoot, and hindfoot varus
e. Forefoot abductus, lateral shift of the midfoot, and hindfoot valgus
27. Which of the following measures was shown to decrease the complication rate in surgical correction of paralytic scoliosis?
a. Preoperative respiratory exercises  
b. Correction of caloric deficiencies  
c. Halofemoral traction  
d. Influenza vaccination  
e. Autologous blood donation

28. The most valid predictor of whether a child will develop avascular necrosis (AVN) after treatment for a slipped epiphysis is:
a. Age of child  
b. Weight of child  
c. Pin placement  
d. Unstable slip  
e. Unilateral or bilateral

29. Which of Enneking's stages is most frequently encountered in bone sarcoma of children?
a. IA  
b. IB  
c. IIA  
d. IIB  
e. III

30. The most optimistic finding for spontaneous healing of an osteochondritis dissecans lesion is:
a. Open physes  
b. Open triradiate cartilage  
c. Skeletal age under 6  
d. Pre-menarcheal

31. Which of the following is less likely to be a factor for selecting amputation in bone sarcoma:
a. Major nerve involvement  
b. Major vessels involvement  
c. Muscle involvement  
d. Joint involvement  
e. Whole bone involvement

32. The fetal femoral cartilage anlage is formed by:
a. 16 weeks  
b. 12 weeks  
c. 24 weeks  
d. 36 weeks

33. Regarding paralytic scoliosis which of the following statements is true?
a. Surgical stabilization of the spine will improve the use of the upper extremities in children with paralytic scoliosis  
b. Duchenne Muscular Dystrophy has an autosomal dominant mode of transmission  
c. Surgical correction of scoliosis will increase life expectancy  
d. Allergy to latex is found exclusively in children with spina bifida  
e. Blood loss during surgical correction of paralytic scoliosis is comparable to patients with idiopathic scoliosis

34. Selective Dorsal Rhizotomy does not improve CP gait by:
a. Decreasing spasticity  
b. Decreasing strength of co-contracting muscles  
c. Decreasing fixed contractures about knee and ankle  
d. Facilitating stretching routine

35. The goals of surgical correction of idiopathic scoliosis include all of the following statements except:
a. Stop the progression of the deformity  
b. Prevent pulmonary compromise  
c. Improve cosmetic appearance  
d. Improve social acceptance and integration  
e. Prevent lumbosacral degenerative discs disease
36. Which of the following statements is true?
   a. Bending films for preoperative evaluation of AIS correction should be done in the standing position
   b. Preoperative traction improve the degree of postoperative correction
   c. Late infection post scoliosis surgery is more common with recent instrumentation systems
   d. Fusion levels can safely be planned from the AP standing film
   e. Anterior instrumentation has a tendency to increase lordosis of the spine

37. What treatment would you recommend for this 11 year old girl with a painful peroneal spastic flatfoot? His CT is shown in following figure:
   a. Subtalar arthrodesis
   b. Completion of subtalar arthrodesis
   c. Triple arthrodesis
   d. Surgical resection of coalition, muscle-interposition, and early active range of motion

38. What is a pathoanatomic hallmark of the cavus or cavovarus foot deformity?

39. What are the current indications for complete soft tissue release in the management of idiopathic or congenital clubfeet?

40. Why is careful evaluation of the spine, both clinically and radiographically and important aspect of the evaluation of the patient with a cavus or cavovarus foot deformity?

41. What is the most common residual deformity following apparent successful, nonoperative and operative treatment of a clubfoot?

42. Define SCIWORA.

43. List three anatomic difference in the occiput / cervical spine in children:
   A
   B
   C

44. Which of the following statements regarding scoliosis in a non-ambulatory patient with cerebral palsy is false?
   a. Posterior spinal fusion and instrumentation should extend from the upper thoracic thoracic spine to the pelvis.
   b. Segmental fixation is important in osteopenic bone.
   c. Brace treatment is recommended.
   d. The incidence of developing scoliosis increases with the level of motor involvement.
   e. The curve pattern is typically a long, sweeping “C” shaped curve extending to the pelvis.

45. Which of the following statements related to scoliosis secondary to Duchenne Muscular Dystrophy is false?
   a. Post-operative complications are rare.
   b. Scoliosis often develops once the patient loses ambulatory ability.
   c. Surgery should be performed prior to significant loss of pulmonary function.
   d. Duflazacort has altered the natural history of Duchenne Muscular Dystrophy.
   e. Cardiac status should be evaluated pre-operatively.
46. Which pattern of congenital scoliosis has the highest risk of progression
   a. Block vertebrae
   b. Unsegmented hemivertebrae
   c. Unilateral bar
   d. Fully segmented hemivertebrae with a contralateral unilateral bar
   e. Butterfly vertebrae

47. List three broad types of Early Onset Scoliosis:
   A _______________________________________________________________
   B _______________________________________________________________
   C _______________________________________________________________

48. Which of the following factors is least likely associated with child abuse
1- Evidence of prior or concurrent injuries
2- Delay in seeking medical attention
3- Variable or conflicting hx about mechanism of injury
4- Child brought in by a parent
5- Perceived lack of parental concern

49. True or false:
Soft tissue injuries are more common than fractures in abuse on children over 3 years of age.

50. The odontoïd originates from the same somite as:
1- arch of the atlas
2- arch of the axis
3- base of the skull
4- occipital condyles

51. Klippel-Feil syndrome is associated with the following anomalies except:
1- Sprengel’s
2- Gastrointestinal
3- Renal
4- Cardiovascular
5- deafness

52. True or false
Severe kyphosis secondary to vertebral apophysitis often leads to pulmonary insufficiency

53. Which of the following statements is false regarding Scheuermann’s kyphosis
1- Scheuermann’s kyphosis usually responds well to bracing
2- The correction obtained by bracing is maintained over time
3- Scheuermann’s kyphosis rarely leads to spinal cord compression
4- is a common cause of back pain in adolescents

54. Define SCIWORA.

55. List three anatomic difference in the occiput / cervical spine in children:
   A. ____________________________
   B. ____________________________
   C. ____________________________

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   a. 
   b. 
   c. 

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   e. Cardiac status should be evaluated pre-operatively.

60. What percentage of overall growth of the humerus originates from the proximal humerus?
   a. 20%
   b. 40%
   c. 60%
   d. 80%

61. What is the last physis to close?
   a. Proximal humerus
   b. Medial Clavicle
   c. Lateral Clavicle
   d. Greater tuberosity

62. A 6 yo patient presents with a swollen knee; your working diagnosis is Oligo-arthritis. What would be your most important investigation?

63. A 10 yo patient with poly-articular JIA needs surgery (knee synovectomy): What kind of pre-op test would you order?

64. What would be the best management for a 10 days old baby diagnosed with OI who presents with multiple fractures and severe bowing of both femurs and tibiae?
   a. Corrective osteotomies and rodning of all long bones first to reduce the fracture rate. Wait 4 months and start a bisphosphonates treatment.
   b. Bisphosphonates first and wait until the child pulls up to stand before doing surgery.

65. Generally speaking of OI: Which statement is wrong?
   a. OI is most often due to a mutation in the collagen genes
   b. There are more than 8 different types of OI
   c. Bisphosphonates improve the bones strength
   d. The clinical diagnosis of OI is made on a blood test

66. Which of the following statements regarding scoliosis in a non-ambulatory patient with cerebral palsy is false?
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   d. Casting for 3 weeks, then physiotherapy for 3 months to encourage ankle motion, then bilateral Knee Ankle Foot Orthosis at night to maintain abduction and external rotation

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   a. Block vertebrae
   b. Unsegmented hemivertebrae
   c. Unilateral bar
   d. Fully segmented hemivertebrae with a contralateral unilateral bar
   e. Butterfly vertebrae

73. The probability of finding MRI abnormalities in Early Onset Scoliosis is:
   a. 5%-10%
   b. 10%-20%
   c. 30%
   d. 40%
   e. 50%

74. A 14-year-old male patient with a leg-length discrepancy undergoes a distal femoral and proximal tibial epiphysiodesis on the longer leg. What is the anticipated amount of correction achieved with this procedure in this child?
   a. 1 cm
   b. 1.8 cm
   c. 3.6 cm
   d. 4.2 cm
   e. 5.6 cm

75. A 14-year-old boy has complete growth arrest of his left proximal tibia after a skateboarding injury. He currently has a 3mm leg-length discrepancy with left shorter than the right. A radiograph of the patients left hand, wrist, and fingers demonstrate a bone-age of 14 years. What is the most appropriate management of this patient?
   a. Observation
   b. Left tibial lengthening
   c. Right tibia epiphysiodesis
   d. Right femur epiphysiodesis
   e. Amputation
76. A 6 year-old patient presents with a swollen knee; your working diagnosis is Oligo-arthritis:  
What would your most important investigation?

77. A 10 year-old patient with poly-articular JIA needs surgery (knee synovectomy):  
What kind of pre-op test would you order?

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a. Corrective osteotomies and rodding of all long bones first to reduce the fracture rate. Wait 4 months and start a bisphosphonates treatment.  
b. Bisphosphonates first and wait until the child pulls up to stand before doing surgery.

80. A 6 year-old OI boy presents with a radius fracture. You will tell the parents that because of the underlying condition, it is likely:  
a. to take more time to heal than the normal bone  
b. to take the same time  
c. to heal faster than normal bone

81. True or false :  
Pelvic Tilt is the angle measured by a line joining the center of the sacral plate and the horizontal line?

82. True or false :  
A balanced pelvis has a sacral slope higher than its pelvic tilt?

83. What is not recognized as a prognostic indicator in conventional osteosarcoma?  
a. Alkaline phosphatase  
b. Tumor volume  
c. Tumor response to neoadjuvant chemotherapy  
d. Gender  
e. Axial location

84. What is the specific gene or chromosomal anomaly found in osteosarcoma  
a. 11-22 translocation  
b. Ring form of chromosome 12  
c. X-18 translocation  
d. Telomeric fusions  
e. no specific gene or chromosomal alteration

85. Define SCIWORA

86. List three anatomic differences in the occiput / cervical spine in children

87. Which pattern of congenital scoliosis has the highest risk of progression?  
a. Block vertebrae  
b. Unsegmented hemivertebrae  
c. Unilateral bar  
d. Fully segmented hemivertebrae with a contralateral unilateral bar  
e. Butterfly vertebrae
88. List three broad types of Early Onset Scoliosis

89. Which of the following statements regarding scoliosis in a non-ambulatory patient with cerebral palsy is false?
   a. Posterior spinal fusion and instrumentation should extend from the upper thoracic spine to the pelvis.
   b. Segmental fixation is important in osteopenic bone.
   c. Brace treatment is recommended.
   d. The incidence of developing scoliosis increases with the level of motor involvement.
   e. The curve pattern is typically a long, sweeping “C” shaped curve extending to the pelvis.

90. Which of the following statements related to scoliosis secondary to Duchenne Muscular Dystrophy is false?
   a. Post-operative complications are rare.
   b. Scoliosis often develops once the patient loses ambulatory ability.
   c. Surgery should be performed prior to significant loss of pulmonary function.
   d. Duflazacort has altered the natural history of Duchenne Muscular Dystrophy.
   e. Cardiac status should be evaluated pre-operatively.

91. A 8 year old boy made a bad fall while skiing. He has a tranverse mid-diaphyseal closed fx of his right femur. What is the best tx?
   a. Skeletal traction of the proximal tibia for 3 weeks and spica cast
   b. ORIF
   c. External fixator
   d. Immediate spica casting
   e. Elastic stable intramedullary nailing

92. What's a Seymour injury?
   a. a growth plate fracture of the distal phalanx
   b. an avulsion of the extensor tendon
   c. an open fracture of the distal phalanx
   d. an avulsion of the flexor digitorum profundus tendon

93. What is the worst complication that can occur after a rigid intramedullary nailing in a 12 year old boy?
   a. Shortening of the limb of 15 mm
   b. Valgus angulation of 7°
   c. Avascular necrosis of the femoral head
   d. Malrotation of 10°
   e. Superficial wound infection

94. About pediatric scaphoid injury, ALL sentences are true except:
   a. The scaphoid ossifies at around 5-6 years of age
   b. Distal pole fractures are often caused by direct trauma
   c. Waist (middle third) fractures are uncommon
   d. In scaphoid nonunion, the treatment includes ORIF as well as conventional or vascularised bone graft.

95. Which of the following statements regarding scoliosis in a non-ambulatory patient with cerebral palsy is false?
   a. Posterior spinal fusion and instrumentation should extend from the upper thoracic spine to the pelvis.
   b. Segmental fixation is important in osteopenic bone.
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97. Define SCIWORA.

98. List three anatomic differences in the occiput / cervical spine in children:
   a.
   b.
   c.

99. Which pattern of congenital scoliosis has the highest risk of progression
   a. Block vertebrae
   b. Unsegmented hemivertebrae
   c. Unilateral bar
   d. Fully segmented hemivertebrae with a contralateral unilateral bar
   e. Butterfly vertebrae

100. List three broad types of Early Onset Scoliosis:
    f.
    g.
    h.

101. The parents of an otherwise healthy 15-month-old boy present with complaints of “bowleggedness”. The child began walking at 12 months of age. Family history is negative for skeletal dysplasia or metabolic bone disease. The parents report no unusual dietary habits or restrictions. They are unaware of any specific injury to the legs. Clinical photographs are as noted. The most likely diagnosis is: Metabolic bone disease (rickets) due to vitamin-D metabolism disturbance, such as chronic renal failure.
    a. Infantile Blount’s disease due to early walking.
    b. Spondylo-epiphyseal dysplasia.
    c. Physiologic varus deformity.
An otherwise healthy, slightly overweight adolescent male presents for evaluation and management of progressive left bowleg deformity. After clinical and radiographic evaluation, you make a diagnosis of adolescent Blount’s disease. AP radiographs of the lower extremities and a tracing of the left leg from the radiographs are below. You determine from the radiographs that the patient has:

a. Proximal tibial varus deformity (only).
b. Both distal femoral and proximal tibial varus deformity.
c. Proximal tibial varus deformity and partially-compensating distal femoral valgus deformity.
d. Proximal and distal tibial varus deformities.

You have successfully corrected the unilateral clubfoot deformity in an otherwise healthy male from infancy using the Ponseti technique, including percutaneous heelcord lengthening and night-time bracing. The child is now age two, and has a plantigrade foot without dynamic supination deformity. You advise the parents that:

a. Further follow up is not necessary, since recurrence of deformity is rare after the age of two years.
b. Recurrent deformity after age two implies an otherwise not-previously-recognized neurological abnormality.
c. Recurrent deformity most likely will require posteromedial release to correct.
d. Recurrent deformity may respond to repeat serial casting, with or without posterior release and/or tibialis anterior tendon transfer.

The key anatomic deformities in idiopathic clubfoot deformity includes:

a. Hindfoot equinus, planovalgus, and forefoot pronation.
b. Hindfoot equinus, cavus, and forefoot pronation.
c. Hindfoot equinus, cavus, and forefoot supination.
d. Neutral hindfoot, severe midfoot equinocavus, and forefoot supination.

Name one simple investigation that can help you make the diagnosis of eosinophilic granuloma.

Name one difference in the physical examination of patients affected by Ewing sarcoma and Lymphoma.
107. With respect to back pain evaluation and treatment in the pediatric population, which of the following statements is true?
   a. All patients with a duration of pain > 3 months should have an MRI as part of their work up
   b. Blood work is uniformly normal and is not useful in the work up of back pain in the pediatric population
   c. Specific pathology related to the symptoms will be discovered in >70% of patients
   d. Non specific intermittent back pain is effectively managed by a formal exercise program

108. Which of the following statements regarding pelvic fractures in pediatric polytrauma patients is true?
   a. The associated mortality rate is <5%
   b. The most common mechanism is a fall from height
   c. The most common fracture pattern is a single break in the pelvic ring
   d. Operative treatment is required in 25% of cases

109. Which of the following is/are an indication for an open reduction?
   a) Very narrow safe zone
   b) 10 mm medial dye pool
   c) Initial presentation at 12 months of age
   d) Failed Pavlik Harness wear

110. Which of the following statements are true?
   a) Pelvic osteotomy is indicated when a concentric reduction is not achieved
   b) AVN may occur in untreated DDH
   c) Femoral shortening is always indicated in patients over the age of 2 years
   d) Iliopsoas tendon must be cut to allow proper visualization of the acetabulum

111. A 8 year old boy made a bad fall while skiing. He has a tranverse mid-diaphyseal closed fx of his right femur. What is the best tx?
   a. Skeletal traction of the proximal tibia for 3 weeks and spica cast
   b. ORIF
   c. External fixator
   d. Immediate spica casting
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   b. Valgus angulation of 7°
   c. Avascular necrosis of the femoral head
   d. Malrotation of 10°
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   a.
   b.
   c.

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   d. Duflazacort has altered the natural history of Duchenne Muscular Dystrophy.
   e. Cardiac status should be evaluated pre-operatively.

116. What percentage of overall growth of the humerus originates from the proximal humerus?
   a. 20%
   b. 40%
   c. 60%
   d. 80%

117. What is the last physis to close?
   a. Proximal humerus
   b. Medial Clavicle
   c. Lateral Clavicle
   d. Greater tuberosity

118. Are children with clavicle fractures just small Canadian adults?
   a. Yes
   b. No

119. A 10 year old female fell off the top of a fence and sustained a posterior hip dislocation which was reduced immediately in the emergency room. A followup radiograph is shown below. The hip felt stable once reduced. The next step in management is

   a) Obtain a hip abduction orthosis and apply for 6 weeks
   b) Obtain a CT scan or MRI to evaluate the reduction
   c) Examine the hip under the image intensifier
   d) Explore the hip through an anterior approach
   e) Explore the hip via a posterior approach
120. A 7 year old male presents with the complaint of pain and stiffness in his elbow. He has a history of a fall on the outstretched arm approximately 4 months ago, and was treated in a cast for 4 weeks. Based on the x-rays shown below, what is the best option for treatment?

Open reduction of the radial head with annular ligament reconstruction
a Radial head replacement
b Ulnar osteotomy with open reduction of radial head and annular ligament reconstruction
c Obtain an MRI scan of the elbow
d b and d

121. A 18 month old presents with left hip pain after rolling over in bed. Clinical examination shows discomfort limited to movement of the left hip. Radiographs are shown below. The most appropriate management is

a. Perform an immediate closed versus open reduction and fixation, then obtain an MRI
b. Perform an immediate closed versus open reduction, obtain a skeletal survey
c. Perform a skeletal survey, admit for observation and plan for definitive treatment in the morning
d. Admit, place in bucks traction, and plan for definitive management in the morning
122. A seven year old female presents with a history of fevers and left arm pain, which resolved when she developed drainage over the dorsum of her wrist. She now is afebrile but complains of intermittent drainage from and open area where her bone is exposed. The best option for salvage at this point is
   a. Sequestrectomy/debridement, and second stage reconstruction involving creation of a single bone forearm
   b. Sequestrectomy/debridement followed by bone transport
   c. Long term antibiotics
   d. Sequestrectomy/debridement and free vascularized fibular grafting
   e. b and c
   f. a and c

123. An 8 year old male presents with intermittent discomfort around the ankle, with no history of an injury. The pain is not linked to any specific activity. An AP radiograph is shown, and his inflammatory markers are normal. Appropriate treatment options include
   a. Obtain and MRI
   b. Begin empiric antibiotics and follow the clinical course and radiographs
   c. Obtain a CT guided biopsy and begin antibiotics
   d. Perform an open biopsy, followed by curettage and antibiotics if appropriate
   e. A and b
124. A ten year old boy has recently emigrated to Canada and presented complaining of several areas of swelling over his skull, and pain in the left arm with a skin lesion that will not heal. Laboratory studies shown a mild elevation in the ESR and the CRP. His radiographs are attached. The next step in management is
   a. Obtain a CT scan and MRI
   b. Perform a biopsy
   c. Begin empiric antibiotics
   d. Obtain a PET scan and an MRI
   e. b and c

125. Recent trends in the management of acute hematogenous osteomyelitis have focused on
   a. More aggressive surgical debridement
   b. A short course of inpatient intravenous antibiotics, with discharge on oral antibiotics assuming an appropriate clinical response
   c. Placement of PICC lines with 6 weeks of intravenous antibiotics
   d. Follow-up imaging with MRI to evaluate disease course
   e. b and d

126. Acute hematogenous osteomyelitis due to MRSA
   a. Is associated with more complications including DVT, septic emboli
   b. Requires more surgical procedures than those with MSSA
   c. Cases with +PVL have a more indolent clinical course
   d. Cases with +PVL have a more virulent clinical course
   e. a,b,d
   f. a,b,e

127. Risk factors for a worse prognosis in acute hematogenous osteomyelitis include
   a. Negative culture
   b. Delay in treatment
   c. Older age
   d. Location in the proximal femur
   e. MRSA, especially PVL+
   f. Concurrent septic arthritis
   g. b,c,d,f
   h. c,e,f
   i. b,d,e,f
128. The initiation of Ponseti-type manipulation and casting in the neonate with idiopathic clubfoot should be within:

a. Several hours of birth  
b. Several days of birth  
c. Several weeks of birth  
d. Several months of birth  
e. Whenever the elective clinic schedule allows

129. The general order of correction in idiopathic clubfoot is:

a) Adductus, Varus, Cavus, Equinus  
b) Cavus, Adductus, Varus, Equinus  
c) Equinus, Cavus, Adductus, Varus  
d) Varus, Cavus, Equinus, Adductus  
e) Cavus, Adductus, Equinus, Varus

130. A teenager suffering a concussion in their Junior A hockey team’s final playoff game can return to the game when:

a) They catch their breath  
b) Their neurological exam is normal  
c) It depends on the score  
d) At the next period  
e) They cannot return to the game

131. An adolescent athlete with a traumatic anterior shoulder dislocation has a lower rate of repeat dislocation than a similar but 27 year old patient.

a) True  
b) False

132. Mark all correct answers: Early onset scoliosis patients have increased mortality compared to the general population

a) when they have neglected untreated deformities  
b) when thoracic fusion is performed before age 8 years  
c) when growing rods or Veptrs are used  
d) because they are treated with casts

133. Mark all correct answers: Effective growth-sparing treatment for young EOS patients is critical because

a) In situ fusion effectively stops crankshaft phenomenon  
b) Pulmonary function is not impaired if thoracic length is diminished  
c) Progressive scoliosis produces worsening spinal penetration into the convex hemithorax  
d) Thoracic spine and rib length are dependent on continuing growth in adolescence

134. Mark all correct answers: Lower extremity xrays are indicated for diagnosis and prognosis in a 2 year old child with bowlegs or knock knees

a) when the deformity is asymmetric  
b) when there is a limb length difference  
c) when the child is not walking independently  
d) when the patient's grandmother asks if they should see a chiropractor  
e) when there is a limp

135. Mark all correct answers: Blount disease can be corrected by

a) bracing if the patient refuses surgery  
b) growth modulation / hemi-epiphysiodesis at any time before maturity  
c) osteotomy alone in an 8 yo with overcorrection into valgus mechanical axis  
d) osteotomy alone in a 14 yo with overcorrection into valgus mechanical axis  
e) completion of epiphysiodesis after growth modulation in an adolescent
ANSWERS

1. D  

2. D

3. D

4. E

5. C

6. B

7. B

8. B

9. D

10. B

11. D

12. C  

13. C  

14. C

15. B

16. D

17. B

18. B

19. D

20. C

21. B

22. B

23. B  

24. A  
38. Plantar flexion of the first ray is the major pathoanatomic feature of cavus or cavovarus foot. However, its etiology is due to muscle imbalance from either the intrinsic or extrinsic muscles. It is important that clinicians appreciate that a tight tendoAchilles is rarely, if ever, a feature of these deformities and lengthening of the tendoAchilles is contraindicated.

References:

39. When the Ponsetti method fails and there is clinical and radiographic evidence of incomplete correction with rigidity, hindfoot varus, midfoot varus, cavus, and forefoot supination, a complete soft tissue release can be considered. Also, older, children with failed conservative or previous operative management are candidates. It will be important that all components of the clubfoot be addressed simultaneously. Internal fixation of the talonavicular and possibly the talocalcaneal joints may be necessary.

References:

40. Intraspinal anomalies are a common cause for a cavovarus foot deformity, particularly when it occurs unilaterally. Intraspinal lesions, such as a lipoma, diastematomyelia, and other intraspinal abnormalities can produce this deformity. Thus, any patient
presenting with a cavovarus deformity, particularly if unilateral, should undergo magnetic resonance imaging of the spine to assess for a possible intraspinal lesion.

References:

41. Residual muscle imbalance from a strong tibialis anterior muscle and weak antagonists producing a dynamic supination deformity is probably the most common residual deformity. Many authors have commented that incomplete correction or recurrent deformity is the most common abnormality. However, the strong tibialis anterior muscle probably contributes to all of these. When present, centralization or splitting of the tibialis anterior tendon is the appropriate method of treatment. This corrects the supination deformity and allows a smooth dorsiflexion arch of motion. Wicart, et al also recommended tibialis anterior lengthening during a complete soft tissue release be performed to prevent this problem.

References:

42. Spinal Cord Injury without Radiographic Abnormality is a term that was originated pre-MRI. In reality, the majority of these patients without x-ray abnormality do have MRI signal change in the spinal cord.

43. Accept any of: Head is larger relative to the torso, increased ligamentous laxity / pseudosubluxation, reduced facet joint angles (i.e. horizontal facet joints), immature musculature, spinal column is more elastic than the cord.

44. C
Brace treatment is largely ineffective at controlling progression of scoliosis in patients with cerebral palsy.

45. A
There is a high rate of post-operative complications including bleeding, infection, implant failure, and pneumonia.

46. D
Fully segmented hemivertebrae with a contralateral unilateral bar may progress greater than 10 degrees per year in the lumbar spine.

47. Accept any three of: congenital, infantile idiopathic, juvenile idiopathic, neuromuscular, syndromic.

48. 4

49. True

50. 1

51. 2

52. False

53. 2

54. Spinal Cord Injury without Radiographic Abnormality is a term that was originated pre-MRI. In reality, the majority of these patients without x-ray abnormality do have MRI signal change in the spinal cord.

55. Accept any of: Head is larger relative to the torso, increased ligamentous laxity / pseudosubluxation, reduced facet joint angles (i.e. horizontal facet joints), immature musculature, spinal column is more elastic than the cord.

56. D. Fully segmented hemivertebrae with a contralateral unilateral bar may progress greater than 10 degrees per year in the lumbar spine.

57. Accept any three of: congenital, idiopathic, neuromuscular, syndromic
58. C. Brace treatment is not recommended. Braces are largely ineffective at controlling progression of scoliosis in patients with cerebral palsy.

59. A. Post-operative complications are not rare. There is a high rate of post-operative complications including bleeding, infection, implant failure, and pneumonia.

60. D. 80% of humeral growth is from the proximal humerus.

61. B. The medial clavicular physis does not generally close in males until the third decade.

62. C-Spine X-rays

64. #2 is the answer as rodding before walking age carries more risks than benefits

65. #4 is the response: The diagnosis of OI is made on clinical and radiological signs. The blood work will be used to find a mutation (if any) in the collagen genes or in other bone proteins.

66. C. Brace treatment is not recommended. Braces are largely ineffective at controlling progression of scoliosis in patients with cerebral palsy.

67. A. Post-operative complications are not rare. There is a high rate of post-operative complications including bleeding, infection, implant failure, and pneumonia.

68. Spinal Cord Injury without Radiographic Abnormality is a term that was originated pre-MRI. In reality, the majority of these patients without x-ray abnormality do have MRI signal change in the spinal cord.

69. Accept any of: Head is larger relative to the torso, increased ligamentous laxity / pseudosubluxation, reduced facet joint angles (i.e. horizontal facet joints), immature musculature, spinal column is more elastic than the cord.


72. D Fully segmented hemivertebrae with a contralateral unilateral bar may progress greater than 10 degrees per year in the lumbar spine.

73. b
   22 % neural axis abnormality, Dobbs et al, JBJS 2002
   13 % neural axis abnormality, Pahys et al, Spine 2009

74. b. 2 years x .9cm = 1.8 cm

75. a. 3mm + (2 x 6mm) = 15 mm, Observation – LLD< 2 cm

76. Ophthalmologic evaluation (risk of associated uveitis)

77. C-Spine X-rays

78. D : The diagnosis of OI is made on clinical and radiological signs. The blood work will be used to find a mutation (if any) in the collagen genes or in other bone proteins.

79. B : As rodding before walking age carries more risks than benefits

80. B
81. False

82. True

83. D

84. E

85. Spinal Cord Injury without Radiographic Abnormality is a term that was originated pre-MRI. In reality, the majority of these patients without x-ray abnormality do have MRI signal change in the spinal cord.

86. Accept any of: Head is larger relative to the torso, increased ligamentous laxity / pseudosubluxation, reduced facet joint angles (i.e. horizontal facet joints), immature musculature, spinal column is more elastic than the cord.

87. D: Fully segmented hemivertebrae with a contralateral unilateral bar may progress greater than 10 degrees per year in the lumbar spine.

88. Accept any three of: congenital, idiopathic, neuromuscular, syndromic.

89. C: Brace treatment is not recommended. Braces are largely ineffective at controlling progression of scoliosis in patients with cerebral palsy.

90. A: Post-operative complications are not rare. There is a high rate of post-operative complications including bleeding, infection, implant failure, and pneumonia.

91. E

92. C

93. C

94. C

95. C: Brace treatment is not recommended. Braces are largely ineffective at controlling progression of scoliosis in patients with cerebral palsy.

96. A: Post-operative complications are not rare. There is a high rate of post-operative complications including bleeding, infection, implant failure, and pneumonia.

97. Spinal Cord Injury without Radiographic Abnormality is a term that was originated pre-MRI. In reality, the majority of these patients without x-ray abnormality do have MRI signal change in the spinal cord.

98. Accept any of: Head is larger relative to the torso, increased ligamentous laxity / pseudosubluxation, reduced facet joint angles (i.e. horizontal facet joints), immature musculature, spinal column is more elastic than the cord.

99. D: Fully segmented hemivertebrae with a contralateral unilateral bar may progress greater than 10 degrees per year in the lumbar spine.

100. Accept any three of: congenital, idiopathic, neuromuscular, syndromic.

101. D

102. B

103. D
Most of the time, Lymphoma patients present with a larger soft tissue mass. Or Ewing sarcoma patient have a higher tendency of presenting B symptoms.
129. B
130. E
131. B
132. A, B
133. C, D
134. A, B, E
135. B, E