

CME 1

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THE JOURNAL OF BONE & JOINT SURGERY
CONTINUING MEDICAL EDUCATION

CME

REVIEW QUESTIONS

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2003

PURPOSE

The purposes of this CME program are:

- To provide the general orthopaedic surgeon with an ability to assess his or her continuing competence in orthopaedics through the acquisition of contemporary scientific information.
- To provide a broad-based review and update of the major subspecialty areas in orthopaedics.
- To make *The Journal* reader aware of new advances in orthopaedic surgical techniques and technology.

INSTRUCTIONS

In order to benefit most from this educational experience and qualify for Continuing Medical Education credit, please observe the following instructions:

1. Read the learning objectives listed on the Response Form and be certain that they meet your individual learning needs.
2. These CME questions have been derived from the information presented in the April, May, and June issues of the American volume of *The Journal of Bone and Joint Surgery* (Volume 85-A, Numbers 4, 5, and 6). A careful study of each article should yield the best response to each question.
3. Read each question carefully, identify the best answer, and record that answer on the CME Response Form in the back of this document.
4. To receive CME credit, it is absolutely essential that you complete all portions of the attached Response Form and answer each question.
5. In order for the American Academy of Orthopaedic Surgeons to document your participation in the CME activity, Academy Fellows must provide their AAOS membership number in the designated area on the Response Form.
6. In addition to providing the answers to the CME questions, you must complete the examination evaluation questions. These questions are found on the Response Form. The way you answer these evaluation questions will not in any way affect the score that you achieve.
7. All completed answer sheets will be graded, and you will be advised of the results of this examination within four weeks after it is received. In order to qualify for CME credit, a score of more than 50% correct must be achieved on the examination. A charge of \$25 per quarter, or \$95 per year, must be paid at the time that the answer sheet is submitted. **The deadline to submit your answers for grading this set of questions is October 15, 2003.**

1. What is the causal organism in melioidotic septic arthritis?

- A. *Staphylococcus epidermidis*
- B. *Salmonella enteritidis*
- C. *Aeromonas hydrophila*
- D. ***Burkholderia pseudomallei***
- E. *Yersinia enterocolitica*

Kosuwon W, Taimglang T, Sirichativapee W, Jeeravipoolvarn P. Melioidotic septic arthritis and its risk factors. *J Bone Joint Surg Am.* 2003;85:1058-61.

2. The most common anatomical variation of the anterosuperior aspect of the glenoid labrum is:

- A. sublabral foramen only
- B. **sublabral foramen with a cord-like middle glenohumeral ligament**
- C. absent labrum with a cord-like middle glenohumeral ligament
- D. absent labrum with a band-like or sheet-like middle glenohumeral ligament
- E. absent labrum

Rao AG, Kim TK, Chronopoulos E, McFarland EG. Anatomical variants in the anterosuperior aspect of the glenoid labrum. A statistical analysis of seventy-three cases. *J Bone Joint Surg Am.* 2003;85:653-9.

3. Which physical therapy regimen is suggested, by biomechanical studies, to be the safest for preserving articular reduction and elbow range of motion following treatment of an olecranon fracture with a tension band?

- A. early active extension
- B. **early passive range of motion and splinting**
- C. immobilization for six weeks
- D. immobilization for three weeks followed by active range of motion and strengthening
- E. early triceps-strengthening exercises

Hutchinson DT, Horwitz DS, Ha G, Thomas CW, Bachus KN. Cyclic loading of olecranon fracture fixation constructs. *J Bone Joint Surg Am.* 2003;85:831-7.

4. Which of the following is a major risk factor for the development of melioidotic septic arthritis?

- A. chronic renal failure
- B. **diabetes mellitus**
- C. steroid usage
- D. rheumatoid arthritis
- E. thalassemia

Kosuwon W, Taimglang T, Sirichativapee W, Jeeravipoolvarn P. Melioidotic septic arthritis and its risk factors. *J Bone Joint Surg Am.* 2003;85:1058-61.

5. Intramedullary nail fixation of distal tibial fractures is weakest in resisting:

- A. valgus flexion loads
- B. varus flexion loads
- C. **torsional forces**
- D. longitudinal loads
- E. shear forces

Kumar A, Charlebois SJ, Cain EL, Smith RA, Daniels AU,

- Crates JM.** Effect of fibular plate fixation on rotational stability of simulated distal tibial fractures treated with intramedullary nailing. *J Bone Joint Surg Am.* 2003;85:604-8.
- 6. When comparing operative and nonoperative treatment of burst fractures of the thoracolumbar junction in patients without a neurologic deficit, significant differences between the groups at the time of final follow-up can be expected in terms of:**
- kyphosis
 - canal compromise
 - return to work
 - cost**
 - duration of stay in the hospital
- Wood K, Buttermann G, Mehbod A, Garvey T, Jhanjee R, Sechrist V.** Operative compared with nonoperative treatment of a thoracolumbar burst fracture without neurological deficit. A prospective, randomized study. *J Bone Joint Surg Am.* 2003;85:773-81.
- 7. Variations of the anterosuperior aspect of the labrum are significantly associated with which of the following? (Choose the best answer.)**
- rotator cuff tears
 - anterior shoulder instability
 - increased internal rotation of the arm and anterosuperior labral fraying**
 - posterior Bankart lesions
 - rupture of the long head of the biceps
- Rao AG, Kim TK, Chronopoulos E, McFarland EG.** Anatomical variants in the anterosuperior aspect of the glenoid labrum. A statistical analysis of seventy-three cases. *J Bone Joint Surg Am.* 2003;85:653-9.
- 8. The reported clinical practice guideline for the treatment of septic arthritis in children:**
- applies to all children with septic arthritis, including those with associated osteomyelitis, abscesses, or immunocompromise
 - resulted in less variation in process of care, improved efficiency of care, and no increase in negative outcomes**
 - was developed on the basis of expert opinion only
 - was intended as a strict protocol for all patients
 - recommends six weeks of home intravenous antibiotic therapy for uncomplicated cases of septic arthritis that have responded to initial treatment
- Kocher MS, Mandiga R, Murphy J, Goldmann D, Harper M, Sundel R, Ecklund K, Kasser JR.** A clinical practice guideline for treatment of septic arthritis in children. Efficacy in improving process of care and effect on outcome of septic arthritis of the hip. *J Bone Joint Surg Am.* 2003;85:994-9.
- 9. Closure of the growth plate at the end of adolescence is due to:**
- a decline in growth hormone levels
 - an increase in estrogen levels**
 - a decreased rate of chondrocyte proliferation
 - an elevation in thyroid hormone levels
 - an increase in glucocorticoid levels
- Ballock RT, O'Keefe RJ.** Current concepts review. The biology of the growth plate. *J Bone Joint Surg Am.* 2003;85:715-26.
- 10. Above-the-knee amputation is very rare after total knee replacement. Which of the following complications related to the arthroplasty is the most common reason for amputation?**
- arterial injury
 - infection**
 - periprosthetic fracture
 - severe bone loss
 - neurologic injury
- Sierra RJ, Trousdale RT, Pagnano MW.** Above-the-knee amputation after a total knee replacement. Prevalence, etiology, and functional outcome. *J Bone Joint Surg Am.* 2003;85:1000-4.
- 11. The lack of muscular protection that can resist rotational forces at the knee joint in size-matched male and female athletes:**
- is unrelated to gender
 - has both a passive and an active component**
 - is related to the percentage of body fat
 - is determined by height
 - is the sole predictor of injury probability
- Wojtys EM, Huston LJ, Schock HJ, Boylan JP, Ashton-Miller JA.** Gender differences in muscular protection of the knee in torsion in size-matched athletes. *J Bone Joint Surg Am.* 2003;85:782-9.
- 12. In a throwing athlete, the amount of bone that can be removed from the posteromedial corner of the olecranon without increasing strain on the medial collateral ligament is:**
- osteophytes only
 - <3 mm**
 - <6 mm
 - <9 mm
 - 20% of the articular surface
- Kamineni S, Hirahara H, Pomianowski S, Neale P, O'Driscoll SW, Elattrache N, An K-N, Morrey BF.** Partial posteromedial olecranon resection: a kinematic study. *J Bone Joint Surg Am.* 2003;85:1005-11.
- 13. All of the following regarding symptomatic malunion of midshaft fractures of the clavicle are true, EXCEPT:**
- shoulder range of motion is well maintained
 - the distal fragment is typically displaced inferiorly and medially
 - an intercalary iliac crest bone graft is generally required for reconstruction**
 - symptoms consistent with thoracic outlet syndrome often develop
 - the fracture is associated with clavicular shortening of ≥ 2 cm
- McKee MD, Wild LM, Schemitsch EH.** Midshaft malunions of the clavicle. *J Bone Joint Surg Am.* 2003;85:790-7.
- 14. Ankle instability has been postulated as a cause of donor-site morbidity after free fibular harvest. A residual distal fibular segment of less than which of the following lengths has been shown to produce ankle**

- instability during repetitive physiologic loads in an experimental model:**
- 10 cm
 - 8 cm
 - 6 cm
 - 10% of the total fibular length**
 - 20% of the total fibular length
- Pacelli LL, Gillard J, McLoughlin SW, Buehler MJ.** A biomechanical analysis of donor-site ankle instability following free fibular graft harvest. *J Bone Joint Surg Am.* 2003;85:597-603.
- 15. The advantage of intramedullary fixation over plate-and-screw fixation of an intercalary structural allograft is that it:**
- allows micromotion at the host-allograft interface
 - provides rigid fixation of the allograft
 - provides superior protection against fracture**
 - minimizes the risk of nonunion
 - minimizes the risk of infection
- Van Boerum DH, Randall RL, Mohr RA, Conrad EU, Bachus KN.** Rotational stability of a modified step-cut for use in intercalary allografts. *J Bone Joint Surg Am.* 2003;85:1073-8.
- 16. What is the risk of reinfection after shoulder arthroplasty performed for the treatment of postinfectious glenohumeral arthritis?**
- <1%**
 - 2% to 5%
 - 6% to 10%
 - 11% to 20%
 - >20%
- Mileti J, Sperling JW, Cofield RH.** Shoulder arthroplasty for the treatment of postinfectious glenohumeral arthritis. *J Bone Joint Surg Am.* 2003;85:609-14.
- 17. High tension in an anterior cruciate ligament graft in flexion limits flexion and increases anterior laxity. Which of the following factors has been shown to decrease tension in flexion when the transtibial technique is used to drill the femoral tunnel through the tibial tunnel?**
- angle of the femoral tunnel of 60° in the sagittal plane
 - angle of the tibial tunnel of 60° in the sagittal plane
 - angle of the tibial tunnel of 60° with the medial joint line in the coronal plane**
 - movement of the tibial tunnel medially so that the graft impinges on the posterior cruciate ligament
 - movement of the femoral tunnel medially so that the graft impinges on the posterior cruciate ligament
- Simmons R, Howell SM, Hull ML.** Effect of the angle of the femoral and tibial tunnels in the coronal plane and incremental excision of the posterior cruciate ligament on tension of an anterior cruciate ligament graft: an in vitro study. *J Bone Joint Surg Am.* 2003;85:1018-29.
- 18. When bulk femoral head autograft is used to reconstruct the true acetabulum in a patient with developmental dysplasia of the hip, what percentage of the socket should be covered by the native ilium to provide long-term durability of the acetabular reconstruction?**
- ≥80%
 - ≥50%**
 - ≥40%
 - ≥30%
 - ≥20%
- Kobayashi S, Saito N, Nawata M, Horiuchi H, Iorio R, Takaoka K.** Total hip arthroplasty with bulk femoral head autograft for acetabular reconstruction in developmental dysplasia of the hip. *J Bone Joint Surg Am.* 2003;85:615-21.
- 19. Which of the following is true for the use of step-cuts with intercalary allografts?**
- the step-cut should be undersized off the midsagittal plane by at least 2 mm to minimize micromotion
 - a standard midsagittal step-cut optimizes rotational stability
 - step-cuts must always be avoided
 - step-cuts should be used with all intercalary allografts
 - a modest modification that undersizes the step-cut by approximately 1 mm can greatly improve rigidity at the interface and minimize stresses that can lead to fracture**
- Van Boerum DH, Randall RL, Mohr RA, Conrad EU, Bachus KN.** Rotational stability of a modified step-cut for use in intercalary allografts. *J Bone Joint Surg Am.* 2003;85:1073-8.
- 20. Resection of ununited humeral condyles during semiconstrained total elbow arthroplasty:**
- increases operative complexity
 - decreases Mayo Elbow Performance Scores
 - results in early loosening of the humeral component
 - has no effect on elbow, wrist, or forearm strength**
 - decreases forearm rotation
- McKee MD, Pugh DMW, Richards RR, Pedersen E, Jones C, Schemitsch EH.** Effect of humeral condylar resection on strength and functional outcome after semiconstrained total elbow arthroplasty. *J Bone Joint Surg Am.* 2003;85:802-7.
- 21. When performing surgery on a patient with acute prepatellar bursitis, one may need to expose the deepest of the three prepatellar bursae. The deepest of the prepatellar bursae is found just beneath which structure?**
- skin
 - rectus femoris tendon
 - fascia lata
 - intermediate oblique aponeurosis**
 - patellar tendon
- Dye SF, Campagna-Pinto D, Dye CC, Shifflett S, Eiman T.** Soft-tissue anatomy anterior to the human patella. *J Bone Joint Surg Am.* 2003;85:1012-7.
- 22. Which type of ankle fracture is most frequently seen in elderly, non-black women:**

A. isolated fibular fracture

- B. bimalleolar fracture
- C. trimalleolar fracture
- D. isolated medial malleolar fracture
- E. isolated posterior malleolar fracture

Hasselmann CT, Vogt MT, Stone KL, Cauley JA, Conti S. Foot and ankle fractures in elderly white women. Incidence and risk factors. *J Bone Joint Surg Am.* 2003;85:820-4.

23. In a rabbit intertransverse process fusion model, starting indomethacin at what time-point following the arthrodesis had a significant adverse effect on the fusion rate compared with the fusion rates in controls?

- A. one week postoperatively
- B. two weeks postoperatively**
- C. three weeks postoperatively
- D. four weeks postoperatively
- E. six weeks postoperatively

Riew KD, Long J, Rhee J, Lewis S, Kuklo T, Kim YJ, Yukawa Y, Zhu Y. Time-dependent inhibitory effects of indomethacin on spinal fusion. *J Bone Joint Surg Am.* 2003;85:632-4.

24. LIM mineralization protein-1 (LMP-1) exerts its osteoinductive effects by increased expression of what type of proteins?

- A. intracellular proteins
- B. extracellular proteins
- C. platelet-derived growth factors
- D. bone morphogenetic proteins**
- E. vascular growth factors

Minamide A, Boden SD, Viggeswarapu M, Hair GA, Oliver C, Titus L. Mechanism of bone formation with gene transfer of the cDNA encoding for the intracellular protein LMP-1. *J Bone Joint Surg Am.* 2003;85:1030-9.

25. Instability is one of the frequent complications following shoulder arthroplasty. The instability is most commonly attributed to which of the following?

- A. subscapularis disruption
- B. position of the glenoid component
- C. altered rotation of the humeral component
- D. abnormal capsular tension and/or rotator cuff dysfunction**
- E. wear or loosening of the glenoid component

Sanchez-Sotelo J, Sperling JW, Rowland CM, Cofield RH. Instability after shoulder arthroplasty: results of surgical treatment. *J Bone Joint Surg Am.* 2003;85:622-31.

26. Important elements of the operative treatment of unstable nonunions of the distal part of the humerus include all of the following EXCEPT:

- A. stable plate-and-screw fixation
- B. release of the contracted elbow capsule
- C. vascularized bone-grafting**
- D. identification and protection of the ulnar nerve
- E. identification and protection of the radial artery

Ring D, Gulotta L, Jupiter JB. Unstable nonunions of the distal part of the humerus. *J Bone Joint Surg Am.* 2003;85:1040-6.

27. Which of the following terms best describes the mechanism of bone formation induced by LMP-1?

- A. membranous bone formation by transplanted cells
- B. endochondral bone formation by transplanted cells
- C. membranous bone formation by host cells**
- D. endochondral bone formation by host cells
- E. membranous bone formation by host and transplanted cells

Minamide A, Boden SD, Viggeswarapu M, Hair GA, Oliver C, Titus L. Mechanism of bone formation with gene transfer of the cDNA encoding for the intracellular protein LMP-1. *J Bone Joint Surg Am.* 2003;85:1030-9.

28. Reorientation of the acetabulum is frequently used to correct acetabular dysplasia. Which of the following factors has been shown to be important for the achievement of a good long-term clinical outcome?

- A. gender and weight of the patient
- B. concomitant arthrotomy
- C. size of the femoral head
- D. satisfactory joint congruency after surgical correction**
- E. concomitant proximal femoral osteotomy

Schramm M, Hohmann D, Radespiel-Troger M, Pitto RP. Treatment of the dysplastic acetabulum with Wagner spherical osteotomy. A study of patients followed for a minimum of twenty years. *J Bone Joint Surg Am.* 2003;85:808-14.

29. Which is the most common complication of conversion of a fused knee with use of a posterior stabilized total knee prosthesis?

- A. instability of the knee
- B. quadriceps tendon rupture
- C. patellar tendon avulsion
- D. skin edge necrosis**
- E. recurrence of infection

Kim Y-H, Oh S-H, Kim J-S. Conversion of a fused knee with use of a posterior stabilized total knee prosthesis. *J Bone Joint Surg Am.* 2003;85:1047-50.

30. Approximately what percentage of patients were not completely compliant with preoperative instructions regarding avoidance of wrong-site surgery?

- A. 0%
- B. 15%
- C. 40%**
- D. 68%
- E. 97%

DiGiovanni CW, Kang L, Manuel J. Patient compliance in avoiding wrong-site surgery. *J Bone Joint Surg Am.* 2003;85:815-9.

31. Neck pain caused by referred shoulder impingement can be diagnosed with use of each of the following EXCEPT:

- A. a positive referred impingement sign
- B. a pseudocyst in the proximal part of the humerus

- C. a positive referred impingement test
 D. relief of neck pain following subacromial injection
- E. a chief symptom of shoulder pain**
Gorski JM, Schwartz LH. Shoulder impingement presenting as neck pain. *J Bone Joint Surg Am.* 2003;85:635-8.
- 32. To produce the strongest (most resistant to shear) bone graft for use in impaction bone-grafting:**
- A. cancellous allograft should be passed once through a large-aperture bone mill
 B. a large amount of compactive force should be applied to the graft
C. whichever mill is used, the graft should be washed free of fat and marrow
 D. cartilage, cystic material, and cortical bone need not be removed
 E. graft particles should be homogeneous in size
- Dunlop DG, Brewster NT, Madabhushi SPG, Usmani AS, Pankaj P, Howie CR.** Techniques to improve the shear strength of impacted bone graft. The effect of particle size and washing of the graft. *J Bone Joint Surg Am.* 2003;85:639-46.
- 33. Of the following factors, which one decreases the quality of the survivorship of revision total hip arthroplasty after fracture of a ceramic femoral head?**
- A. exchange of the cup
 B. a posterolateral surgical approach
C. use of a new femoral head made of stainless steel
 D. performance of a synovectomy that is as extensive as possible
 E. a long delay between the femoral head fracture and the revision procedure
- Allain J, Roudot-Thoraval F, Delecrin J, Anract P, Migaud H, Goutallier D.** Revision total hip arthroplasty performed after fracture of a ceramic femoral head. A multicenter survivorship study. *J Bone Joint Surg Am.* 2003;85:825-30.
- 34. What is the main complication of the posterolateral approach to an os trigonum?**
- A. peroneal palsy
B. sural nerve injury
 C. flexor hallucis longus tear
 D. wound slough
 E. plantaris muscle tear
- Abramowitz Y, Wollstein R, Barzilay Y, London E, Matan Y, Shabat S, Nyska M.** Outcome of resection of a symptomatic os trigonum. *J Bone Joint Surg Am.* 2003;85:1051-7.
- 35. Joint stiffness is a complication of lengthening. Which technique preserves the best range of motion of the knee during femoral lengthening:**
- A. use of a circular Ilizarov external fixator fixed with fine wires
 B. use of a circular Ilizarov external fixator fixed with threaded half-pins or screws
 C. use of a monolateral external fixator
D. use of an Albizzia intramedullary lengthening nail system
- E. lengthening over a nail**
Guichet J-M, Deromedis B, Donnan LT, Peretti G, Lascombes P, Bado F. Gradual femoral lengthening with the Albizzia intramedullary nail. *J Bone Joint Surg Am.* 2003;85:838-48.
- 36. Which of the following statements is true regarding technical difficulties associated with conversion of a varus distal femoral osteotomy to a total knee arthroplasty?**
- A. patella infera is common and leads directly to exposure difficulties and increased risk of patellar tendon avulsion
B. intra-articular correction of extra-articular deformity may lead to ligamentous instability
 C. varus deformity of the distal part of the femur often requires a more medial starting point when drilling for an intramedullary femoral alignment guide
 D. increased rates of patellar dislocation have been reported secondary to difficulties in achieving proper rotation of the tibial component
 E. less resection of the medial femoral condyle relative to the resection of the lateral condyle will result in varus alignment
- Nelson CL, Saleh KJ, Kassim RA, Windsor R, Haas S, Laskin R, Sculco T.** Total knee arthroplasty after varus osteotomy of the distal part of the femur. *J Bone Joint Surg Am.* 2003;85:1062-5.
- 37. Bone morphogenetic proteins upregulate the expression of their secreted antagonists in an autoregulatory negative feedback loop that controls the induction of osteogenesis. Characteristic clinical features of the condition in which there is a paresis of this autoregulatory negative feedback loop are:**
- A. short stature and heterotopic ossification
 B. blue sclerae and skeletal fragility
C. malformed great toes and heterotopic ossification
 D. scoliosis and multiple fractures
 E. deafness and osteosclerosis
- Ahn J, De La Peña LS, Shore EM, Kaplan FS.** Paresis of a bone morphogenetic protein-antagonist response in a genetic disorder of heterotopic skeletogenesis. *J Bone Joint Surg Am.* 2003;85:667-74.
- 38. Where, anatomically, is the os trigonum located?**
- A. superoposterior aspect of the talus
 B. inferoposterior aspect of the talus
 C. posteromedial aspect of the talus
D. posterolateral aspect of the talus
 E. lateral aspect of the talus
- Abramowitz Y, Wollstein R, Barzilay Y, London E, Matan Y, Shabat S, Nyska M.** Outcome of resection of a symptomatic os trigonum. *J Bone Joint Surg Am.* 2003;85:1051-7.
- 39. Which of the following statements about operative release of complete osseous ankylosis of the elbow is most accurate:**

- A. the results are better in patients with ankylosis related to a severe burn than they are in patients with ankylosis related to trauma
- B. the results are better in patients with ankylosis related to trauma than they are in patients with ankylosis related to a severe burn
- C. the results are predictably good for patients with ankylosis related to either a severe burn or trauma
- D. most patients have substantial gains in motion, but recurrent contractures and re-operations are common in both post-burn and post-trauma patients**
- E. the risk of neurovascular injury is high
Ring D, Jupiter JB. Operative release of complete ankylosis of the elbow due to heterotopic bone in patients without severe injury of the central nervous system. *J Bone Joint Surg Am.* 2003;85:849-57.
- 40. After arthroscopic acromioplasty for primary impingement syndrome, which factor most directly correlates with the time it takes to return to full-duty work?**
- A. compliance with postoperative physical therapy
- B. general anesthesia versus regional anesthesia
- C. the demand level of the job to which the patient is returning**
- D. receiving Workers' Compensation benefits
- E. an arthroscopic, rather than an open, procedure
Nicholson GP. Arthroscopic acromioplasty: a comparison between workers' compensation and non-workers' compensation populations. *J Bone Joint Surg Am.* 2003;85:682-9.
- 41. Assessments of the function of shoulders with a rotator cuff tear are:**
- A. dependent primarily on the size of the cuff tear
- B. comparable across the practices of different surgeons
- C. worse for females than for males**
- D. unaffected by the age of the patient
- E. unrelated to the general health status of the patient
Harryman DT II, Hettrich CM, Smith KL, Campbell B, Sidles JA, Matsen FA III. A prospective multipractice investigation of patients with full-thickness rotator cuff tears. The importance of comorbidities, practice, and other covariables on self-assessed shoulder function and health status. *J Bone Joint Surg Am.* 2003;85:690-6.
- 42. Which of the following best describes the function of the tibialis anterior after split transfer of its distal tendon to the cuboid?**
- A. it is similar to that of the tibialis posterior
- B. it is sensitive to small changes in medial-to-lateral tension balance
- C. it is a slight everter of the hindfoot following the procedure**
- D. it acts to invert the hindfoot when the foot is everted
- E. it is similar to that of the intact tibialis anterior
Piazza SJ, Adamson RL, Moran MF, Sanders JO, Sharkey NA. Effects of tensioning errors in split transfers of tibialis anterior and posterior tendons. *J Bone Joint Surg Am.* 2003;85:858-65.
- 43. Long-term follow-up of cementless total hip replacements has demonstrated that the major reason for reoperation is related to:**
- A. dislocation
- B. infection
- C. fracture
- D. femoral loosening and osteolysis
- E. acetabular loosening and osteolysis**
Bojescul JA, Xenos JS, Callaghan JJ, Savory CG. Results of porous-coated anatomic total hip arthroplasty without cement at fifteen years. A concise follow-up of a previous report. *J Bone Joint Surg Am.* 2003;85:1079-83.
- 44. The optimal position of the hindfoot following fusion of the ankle is:**
- A. 5° of plantar flexion, neutral rotation, and 5° of valgus
- B. neutral dorsiflexion, 15° of external rotation, and 5° of valgus**
- C. 15° of dorsiflexion, 15° of external rotation, and 20° of valgus
- D. neutral dorsiflexion, 5° of internal rotation, and 5° of valgus
- E. 5° of plantar flexion, 15° of external rotation, and 5° of varus
Thomas RH, Daniels TR. Current concepts review. Ankle arthritis. *J Bone Joint Surg Am.* 2003;85:923-36.
- 45. In adolescent patients with juvenile rheumatoid arthritis who require total knee replacement, which of the following should not be expected:**
- A. pain relief
- B. functional improvement
- C. a much improved range of motion**
- D. a substantial complication rate
- E. a substantial reoperation rate
Parvizi J, Lajam CM, Trousdale RT, Shaughnessy WJ, Cabanela ME. Total knee arthroplasty in young patients with juvenile rheumatoid arthritis. *J Bone Joint Surg Am.* 2003;85:1090-4.

46. Which variable is the most important risk factor for plantar fasciitis in at-risk individuals?

- A. body weight
- B. prolonged standing
- C. limited ankle dorsiflexion**
- D. gender
- E. age

Riddle DL, Pulisic M, Pidcoe P, Johnson RE. Risk factors for plantar fasciitis: a matched case-control study. *J Bone Joint Surg Am.* 2003;85:872-7.

47. The most common cause of ankle arthritis is:

- A. inflammatory arthropathy
- B. idiopathic
- C. trauma**
- D. hindfoot deformity
- E. neuropathic

Thomas RH, Daniels TR. Current concepts review. Ankle arthritis. *J Bone Joint Surg Am.* 2003;85:923-36.

48. When cementing a smooth polyethylene liner into an acetabular shell, which of the following will most improve the mechanical strength of the construct?

- A. texturing the acetabular shell
- B. texturing the liner vertically
- C. texturing the liner vertically and circumferentially**
- D. maximizing cement thickness (using a smaller liner)
- E. minimizing cement thickness (using a larger liner)

Haft GF, Heiner AD, Dorr LD, Brown TD, Callaghan JJ. A biomechanical analysis of polyethylene liner cementation into a fixed metal acetabular shell. *J Bone Joint Surg Am.* 2003;85:1100-10.

49. Osteonecrosis is a significant complication for some patients with slipped capital femoral epiphysis. Which of the following patient factors is most closely related to the development of osteonecrosis?

- A. patient weight
- B. patient race
- C. classification of the slip as acute
- D. classification of the slip as unstable**
- E. patient gender

Tokmakova KP, Stanton RP, Mason DE. Factors influencing the development of osteonecrosis in patients treated for slipped capital femoral epiphysis. *J Bone Joint Surg Am.* 2003;85:798-801.

50. The most important factor influencing the outcome of corrective osteotomy for deformity in Paget disease is:

- A. patient age
- B. location of the osteotomy**
- C. medical treatment
- D. type of bone affected
- E. type of fixation

Parvizi J, Frankle MA, Tiegs RD, Sim FH. Corrective osteotomy for deformity in Paget disease. *J Bone Joint Surg Am.* 2003;85:697-702.

ACCREDITATION STATEMENT

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QUESTIONS?

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ANSWER KEY

The correct answers are blacked out.

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|----------------------|----------------------|-----------------------------|
| 1. A B C D E | 18. A B C D E | 35. A B C D E |
| 2. A B C D E | 19. A B C D E | 36. A B C D E |
| 3. A B C D E | 20. A B C D E | 37. A B C D E |
| 4. A B C D E | 21. A B C D E | 38. A B C D E |
| 5. A B C D E | 22. A B C D E | 39. A B C D E |
| 6. A B C D E | 23. A B C D E | 40. A B C D E |
| 7. A B C D E | 24. A B C D E | 41. A B C D E |
| 8. A B C D E | 25. A B C D E | 42. A B C D E |
| 9. A B C D E | 26. A B C D E | 43. A B C D E |
| 10. A B C D E | 27. A B C D E | 44. A B C D E |
| 11. A B C D E | 28. A B C D E | 45. A B C D E |
| 12. A B C D E | 29. A B C D E | 46. A B C D E |
| 13. A B C D E | 30. A B C D E | 47. A B C D E |
| 14. A B C D E | 31. A B C D E | 48. A B C D E |
| 15. A B C D E | 32. A B C D E | 49. A B C D E |
| 16. A B C D E | 33. A B C D E | 50. A B C D E |
| 17. A B C D E | 34. A B C D E | |