

CME 1

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CONTINUING MEDICAL EDUCATION

CME

REVIEW QUESTIONS

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2001

- 1. Proximal lateral opening-wedge osteotomy of the tibia is indicated for osteoarthritis:**
- localized to the lateral condyle of the femur
 - localized to the lateral tibial plateau**
 - due to a previous medial meniscectomy
 - associated with crystal arthropathy
 - localized to the medial condyle of the femur
- René K. Marti, Ronald A.W. Verhagen, Gino M.M.J. Kerkhoffs, Thybout M. Moojen.** Proximal Tibial Varus Osteotomy: Indications, Technique, and Five to Twenty-one-Year Results. *J Bone Joint Surg Am.* 2001;83:164.
- 2. Which of the following deformities in the upper cervical spine caused by rheumatoid arthritis is most likely to lead to sudden death?**
- atlantoaxial subluxation
 - subaxial subluxation
 - basilar invagination**
 - lysis of the odontoid process
 - facet joint erosion
- K. Daniel Riew, Alan S. Hilibrand, Mark A. Palumbo, Navinder Sethi, Henry H. Bohlman.** Diagnosing Basilar Invagination in the Rheumatoid Patient: The Reliability of Radiographic Criteria. *J Bone Joint Surg Am.* 2001;83:194.
- 3. A 45-year-old woman with a cementless total hip replacement prosthesis and a history of metal allergy to inexpensive jewelry complains of general discomfort associated with her implant. Metal hypersensitivity should be considered:**
- when 3 months postoperatively the patient demonstrates dermatitis and swelling near the implant site**
 - when 6 months postoperatively the patient complains of pain and joint swelling, and radiographs show periprosthetic osteolysis
 - when 6 months postoperatively the patient brings positive results of a metal allergy patch test conducted by an allergist
 - when 3 years postoperatively the patient has dermatitis, urticaria, and vasculitis
- Nadim Hallab, Katharine Merritt, Joshua J. Jacobs.** Current Concepts Review. Metal Sensitivity in Patients with Orthopaedic Implants. *J Bone Joint Surg Am.* 2001;83:428.
- 4. In primary total hip arthroplasty for dysplasia with arthritis, a bone graft to improve coverage of the cup is not required if the cup is covered by the host acetabulum by:**
- 40%
 - 50%
 - 60%
 - 70%**
 - 80%
- Greg Jaroszynski, Ian Woodgate, Khaled Saleh, Allan Gross.** Selected Instructional Course Lecture: Total Hip Replacement for the Dislocated Hip. *J Bone Joint Surg Am.* 2001;83:272.
- 5. Arthroscopy of a total knee replacement using a stainless-steel cannula:**
- creates deep troughs in the cobalt-chrome components
 - does not damage the components
- 6. Normal bone turnover in the presence of particulate wear debris can be adversely affected by many mechanisms including the activation of osteoblasts (by ingestion of particles), which can induce:**
- production of IL-6 and PGE-2, and decreased synthesis of type-I collagen**
 - increased elaboration of IL-1 β and TNF- α , which suppresses osteoclast function
 - prostaglandin-mediated early apoptosis of chondroblasts and osteoblasts
 - degradation of the type-I collagen in bone matrix
 - conversion of undifferentiated mesenchymal cells from an osteoblast lineage to a fibroblast lineage
- Csaba Vermes, Raman Chandrasekaran, Joshua J. Jacobs, Jorge O. Galante, Kenneth A. Roebuck, Tibor T. Glant.** The Effects of Particulate Wear Debris, Cytokines, Growth Factors on the Functions of MG-63 Osteoblasts. *J Bone Joint Surg Am.* 2001;83:201.
- 7. The interobserver accuracy for measurement of congenital scoliosis at the 95% confidence level is:**
- ± 1 degree
 - ± 3 degrees**
 - ± 9 degrees
 - ± 12 degrees
 - ± 18 degrees
- Fernando A.M. Facanha-Filho, Robert B. Winter, John E. Lonstein, Steven Koop, Thomas Novacheck, E. A. L'Heureux, Cheryl A. Noren.** Measurement Accuracy in Congenital Scoliosis. *J Bone Joint Surg Am.* 2001;83:42.
- 8. The use of calcium sulfate to fill benign bone lesions:**
- is not recommended due to a high incidence of mechanical failure
 - caused an undesirable inflammatory response
 - could not be followed radiographically to monitor bone resorption
 - has promise as it has desirable resorption characteristics and minimal complications**
 - is not recommended as calcium sulfate was incompletely resorbed in most cases
- Raffy Mirzayan, Vahé Panossian, Raffi Avedian, Deborah M. Forrester, Lawrence R. Menendez.** The Use of Calcium Sulfate in the Treatment of Benign Bone Lesions: A Preliminary Report. *J Bone Joint Surg Am.* 2001;83:355.
- 9. In Puloski's series of retrieved posterior stabilized total knee implants, the most prevalent pattern of wear occurring on the tibial post involved:**
- delamination of the medial surface
 - pitting over the anterior surface
- C. can leave deposits of stainless steel on the components**
- creates stress risers in the bone
 - creates excessive heat due to reflected light
- Gregory E. Raab, Christopher M. Jobe, Paul A. Williams, Qiang G. Dai.** Damage to Cobalt-Chromium Surfaces During Arthroscopy of Total Knee Replacements. *J Bone Joint Surg Am.* 2001;83:46.

- C. burnishing of the posterior surface**
 D. abrasive wear over the anterior surface
 E. third-body wear over the posterior surface
S.K.T. Puloski, R.W. McCalden, S.J. MacDonald, C.H. Rorabeck, R.B. Bourne. Tibial Post Wear in Posterior-Stabilized Total Knee Arthroplasty: An Unrecognized Source of Polyethylene Debris. *J Bone Joint Surg Am.* 2001;83:390.
- 10. During uphill walking, which one of the following gait adaptations is most likely to be seen following a soleus muscle flap procedure for coverage of a severe lower extremity soft-tissue wound?**
 A. decrease in ankle dorsiflexion near the end of single-limb stance
B. shortening of the contralateral step length
 C. compensatory increase in the activity of the anterior tibialis muscle
 D. increase in plantar flexion at toe-off
 E. decrease in peak knee flexion during swing phase
Inès A. Kramers-de Quervain, Jörg M. Lüuffer, Kurt Küch, Otmar Trentz, Edgar Stüssi. Functional Donor-Site Morbidity During Level and Uphill Gait After a Gastrocnemius or Soleus Muscle-Flap Procedure. *J Bone Joint Surg Am.* 2001;83:239.
- 11. Reattachment and repair of the radial carpal ligaments through a volar approach is best indicated for which one of the following wrist injuries?**
A. pure radiocarpal dislocation with a fracture of the tip of the radial styloid process
 B. radiocarpal dislocation with a radial styloid fracture entering the midportion of the distal radial fossa
 C. radiocarpal dislocation with an avulsion fracture of the ulnar styloid process and a dorsal lip fracture of the radius
 D. carpal lunate dissociation with an associated capitate fracture
 E. radiocarpal dislocation with a “die-punch” fracture of the distal radius
C. Dumontier, G. Meyer zu Reckendorf, A. Sautet, E. Lenoble, P. Saffar, Y. Allieu. Radiocarpal Dislocations: Classification and Proposal for Treatment: A Review of Twenty-seven Cases. *J Bone Joint Surg Am.* 2001;83:212.
- 12. Low-intensity ultrasound, as approved by the FDA for the treatment of fractures:**
 A. is the same magnitude and frequency as that used in diagnostic procedures
 B. works more effectively if the fracture is treated for more than 1 hour per day
 C. fails to influence the fracture-healing patterns of patients who smoke
D. can decrease the healing time of fresh fractures up to 40%
 E. accelerates union of cortical bone but fails to influence the healing times in trabecular bone
Clinton Rubin, Mark Bolander, John P. Ryaby, Michael Hadjiargyrou. Current Concepts Review. The Use of Low-Intensity Ultrasound to Accelerate the Healing of Fractures. *J Bone Joint Surg Am.* 2001;83:259.
- 13. The following is a list of factors that may potentially decrease the incidence of loosening and infection of the pins used for fixation of halos used to immobilize the cervical spine. Which factor does not reduce the rate of complications but rather increases it?**
 A. use of 6 pins rather than 4 pins
 B. decreasing the distance between the halo ring and the skull
C. placing the halo pin above (superior) to the maximum circumference of the skull
 D. retightening the pins at a suitable time interval following application of the halo
 E. reducing the patient’s activity level and ensuring that the appropriate vest is well fitted
Jeffrey A. Nemeth, L. George Mattingly. Six-Pin Halo Fixation and the Resulting Prevalence of Pin-Site Complications. *J Bone Joint Surg Am.* 2001;83:377.
- 14. Correction of the palmar rotation of the carpal scaphoid in the modified Graner procedure for advanced Kienböck disease is important to:**
 A. prevent gradual radial shift of the carpus on the radius
B. improve grip strength
 C. improve residual motion in the remaining radiocarpal and intercarpal joints
 D. prevent progression of osteoarthritis
 E. prevent late carpal tunnel syndrome
Katsumi Takase, Atsuhiko Imakire. Lunate Excision, Capitate Osteotomy, Intercarpal Arthrodesis for Advanced Kienböck Disease: Long-Term Follow-up. *J Bone Joint Surg Am.* 2001;83:177.
- 15. During primary total hip arthroplasty for the dysplastic hip with arthritis, what is the maximum lengthening possible if the sciatic nerve is monitored by visualization and palpation and, if necessary, a wake-up test:**
 A. 2 centimeters
B. 4 centimeters
 C. 6 centimeters
 D. 8 centimeters
 E. none at all
Greg Jaroszynski, Ian Woodgate, Khaled Saleh, Allan Gross. Selected Instructional Course Lecture. Total Hip Replacement for the Dislocated Hip. *J Bone Joint Surg Am.* 2001;83:272.
- 16. In the treatment of severe congenital femoral deficiency, the results of a rotationplasty of the affected limb can be enhanced by:**
 A. addition of a Syme amputation
B. fusing the residual femur to the ilium
 C. doing the procedure before the age of 2 years
 D. amputating the toes
 E. shortening the opposite limb
Kenneth L.B. Brown. Resection, Rotationplasty, Femoropelvic Arthrodesis in Severe Congenital Femoral Deficiency: A Report of the Surgical Technique and Three Cases. *J Bone Joint Surg Am.* 2001;83:78.
- 17. The single most important technical factor preventing serious nerve injuries during elbow arthroscopic capsulotomy or synovectomy is:**

- A. the use of an arm holder
- B. the use of suction and a pump
- C. the use of retractors**
- D. the size of the instruments
- E. the use of non-powered instruments

Edward W. Kelly, Bernard F. Morrey, Shawn W. O'Driscoll. Complications of Elbow Arthroscopy. *J Bone Joint Surg Am.* 2001;83:25.

18. Lower extremity injury severity score thresholds have been utilized to select patients for amputation or limb reconstruction surgery. A large prospective analysis of the scores found:

- A. all are very specific and sensitive and can be used for clinical decision-making
- B. only the MESS was a reliable clinical tool
- C. the high specificity of the scores validated their use in deciding when early amputation is indicated
- D. no support for the utility of any kind of the scores for discrimination between limbs requiring amputation and those likely to be successfully salvaged**

Michael J. Bosse, Ellen J. MacKenzie, James F. Kellam, Andrew R. Burgess, Lawrence X. Webb, Marc F. Swionkowski, Roy W. Sanders, Alan L. Jones, Mark P. McAndrew, Brendan M. Patterson, Melissa L. McCarthy, Juliana K. Cyril. A Prospective Evaluation of the Clinical Utility of the Lower-Extremity Injury-Severity Scores. *J Bone Joint Surg Am.* 2001;83:3.

19. During a revision knee arthroplasty, it is discovered that the patellar implant is worn and loose. After removal of the patellar implant, the height of the remaining patellar bone measures 12 millimeters. Under these circumstances, it is preferable to:

- A. graft the patella and then insert a new prosthesis
- B. insert a new prosthesis on the remaining patella
- C. perform a patellectomy
- D. leave the remaining patella in place and not insert a new patellar prosthesis

E. bone graft the remaining patella using a sub-synovial pouch

Arlen D. Hanssen. Bone-Grafting for Severe Patellar Bone Loss During Revision Knee Arthroplasty. *J Bone Joint Surg Am.* 2001;83:171.

20. Complete the following statement with the most correct phrase. In patients 50 years of age and older with fractures of the distal radius, injection of a bone cement that undergoes remodeling gives better outcomes when compared to cast immobilization alone,

- A. regardless of the amount of fracture comminution
- B. even without cast immobilization
- C. when the position after closed reduction was satisfactory**
- D. but only in the treatment of nondisplaced fractures
- E. however the rate of malunions was higher in the group treated with cement

J. Sanchez-Sotelo, L. Munuera, R. Madero, Michael D. McKee. Evidence Based Orthopaedics. The Norian Skeletal Repair System Was Effective for Fractures of the Distal Radius. *J Bone Joint Surg Am.* 2001;83:302.

21. When compared to uninstrumented, bone-only anterior decompression and fusion for the operative treatment of single-level cervical degenerative disc disease, the use of a fusion cage is associated with:

- A. increased rates of both fusion and complications
- B. an increased fusion rate and fewer complications**
- C. a lower fusion rate and more frequent complications
- D. a lower fusion rate and fewer complications
- E. improved functional outcome measures

R.J. Hacker, J.C. Cauthen, T.J. Gilbert, S.L. Griffith, Robert B. Keller. Evidence-Based Orthopaedics. Treatment with an Anterior Cervical Fusion Cage Was Safe and Effective for Cervical Degenerative Disc Disorders. *J Bone Joint Surg Am.* 2001;83:301.

22. A patient with a hip fracture is mentally incapable of giving informed consent for non-emergent surgical fixation of the fracture. No immediate family members can be found, and the patient has not previously granted anyone power of attorney. If the orthopaedic surgeon wishes to proceed with surgical fixation of the fracture, the surgeon should first:

- A. contact the risk management department and its malpractice insurance carrier
- B. carefully document that the procedure is in the patient's best interest and then proceed with surgery
- C. obtain a second opinion from another qualified physician
- D. seek a court-appointed surrogate to act on the patient's behalf**
- E. ask the hospital legal counsel to place a note in the medical record responding to the need for surgery

David M. Kahler, Walt Davis. Ethics in Practice. Inability to Obtain Formal Informed Consent in the Face of a Standard Surgical Indication. *J Bone Joint Surg Am.* 2001;83:142.

23. What is the most important major goal of any community trauma hospital?

- A. create a workable call schedule for staff surgeons
- B. ensure that patients do not die from treatable injuries**
- C. detect early and refer complex spine and pelvic trauma to level-one centers
- D. create contracts that exclude complex trauma care
- E. design better telecommunication systems for trauma care

Timothy J. Bray. The Orthopaedic Forum. Design of the Northern Nevada Orthopaedic Trauma Panel: A Model, Level-II Community-Hospital System. *J Bone Joint Surg Am.* 2001;83:283.

24. Radiographic analysis of the kinematics of the low contact stress meniscal bearing total knee replacement demonstrates that during knee flexion:

- A. femoral rollback occurs in the vast majority of cases

- B. the meniscal bearings do not move appreciably
- C. knee flexion is decreased in knees that do not demonstrate femoral rollback**
- D. the lack of femoral rollback indicates an insufficiency of the posterior cruciate ligament
- E. the meniscal bearings move backward as much as 1 centimeter
- James M. Hartford, Daxes Banit, Keit Hall, Herbert Kafer.** Radiographic Analysis of Low Contact Stress Meniscal Bearing Total Knee Replacements. *J Bone Joint Surg Am.* 2001;83:229.
- 25. Intraoperative injury to the medial collateral ligament during primary total knee arthroplasty (TKA) for varus gonarthrosis is best treated by:**
- A. primary repair combined with medial hamstring transfer
- B. immediate primary suture repair and hinged knee bracing for 6 weeks**
- C. a rotating hinged TKA component
- D. proceeding with the case as though the injury had not occurred
- E. immediate allograft reconstruction of the medial collateral ligament
- Seth S. Leopold, Chris McStay, Karen Klafeta, Joshua J. Jacobs, Richard A. Berger, Aaron G. Rosenberg.** Primary Repair of Intraoperative Disruption of the Medial Collateral Ligament During Total Knee Arthroplasty. *J Bone Joint Surg Am.* 2001;83:86.
- 26. Inferences from meta-analyses are most limited by which of the following?**
- A. publication bias
- B. scientific methodology of the meta-analysis
- C. quality of the primary studies being pooled**
- D. lack of studies authored by epidemiologists
- E. publication in a non-surgical journal
- Mohit Bhandari, Farrah Morrow, Abhaya V. Kulkarni, Paul Tornetta, III.** Meta-Analyses in Orthopaedic Surgery: A Systematic Review of Their Methodologies. *J Bone Joint Surg Am.* 2001;83:15.
- 27. An acute grade-III injury of the ligamentous structures of the posterolateral knee is probably best treated by:**
- A. bracing and aggressive physical therapy
- B. delayed reconstruction of injured structures using allograft
- C. immediate reconstruction of all injured structures with allograft
- D. direct anatomic repair of all injured structures within 3 weeks**
- E. long leg cast immobilization for at least 6 weeks
- Dana C. Covey.** Current Concepts Review. Injuries of the Posterolateral Corner of the Knee. *J Bone Joint Surg Am.* 2001;83:106.
- 28. The ERAS (Electronic Residency Application Service) charts of female applicants to orthopaedic residency programs are ranked:**
- A. significantly better than those of males with similar qualifications
- B. significantly worse than those of males with similar qualifications
- C. the same as those of males with similar qualifications**
- D. more highly if the applicant is an accomplished athlete
- E. more highly by female reviewers
- Susan A. Scherl, Nicole Lively, Michael A. Simon.** Initial Review of Electronic Residency Application Service Charts by Orthopaedic Residency Faculty Members: Does Applicant Gender Matter? *J Bone Joint Surg Am.* 2001;83:65.
- 29. In patients with femoral neck and intertrochanteric fractures, preoperative skin traction:**
- A. reduces pain
- B. decreases complications
- C. improves fracture healing
- D. is no more effective than no traction**
- E. is equally effective as skeletal traction
- R. Jerre, A Doshé, J. Karlsson, Kenneth J. Koval.** Preoperative Skin Traction Was Not Useful for Hip Fractures. *J Bone Joint Surg Am.* 2001;83:303.
- 30. True intra-articular lipoma is characterized by:**
- A. slow enlargement of a painless knee swelling accompanied by intermittent effusions
- B. joint trauma, meniscal lesions, chronic synovitis or arthritis
- C. a history of joint swelling and pain of varying duration caused by the interposition of the tumor mass and strangulation of the tumor secondary to volvulus about its stalk**
- D. villous proliferation of the synovial membrane and hyperplasia of the subsynovial fat
- E. magnetic resonance findings of a large frond-like mass arising from the synovium with a signal intensity similar to that of fat in a pulse sequence
- Keiji Matsumoto, Hidetoshi Okabe, Michihito Ishizawa, Seiji Hiraoka.** Intra-Articular Lipoma of the Knee Joint: A Case Report. *J Bone Joint Surg Am.* 2001;83:101.
- 31. In the long-term follow-up of transtibial amputees from the Vietnam war, the only difference between those with an isolated injury and those with multiple injuries was:**
- A. quality of gait pattern
- B. incidence and severity of stump complications
- C. need for psychological support services**
- D. amount of prosthetic wear
- E. number of years employed
- Paul J. Dougherty.** Transtibial Amputees from the Vietnam War: Twenty-eight-Year Follow-up. *J Bone Joint Surg Am.* 2001;83:383.
- 32. The amount of time required to successfully infect peripheral blood derived buffy coat cells with adenoviruses containing the LMP-1 cDNA is:**
- A. 1 minute
- B. 10 minutes
- C. 60 minutes**
- D. 2 hours
- E. 10 hours
- Manjula Viggeswarapu, Scott D. Boden, Yunshan Liu, Gregory A. Hair, John Louis-Ugbo, Hideki Murakami, Hak Sun Kim, Matthew T. Mayr, William C. Hutton, Louisa Titus.**

Adenoviral Delivery of LIM Mineralization Protein-1 Induces New-Bone Formation in Vitro and in Vivo. *J Bone Joint Surg Am.* 2001;83:364.

33. When comparing early and delayed surgical treatment of displaced supracondylar fractures of the humerus in children, which of the following statements is most accurate?

- A. early surgery significantly reduces the need for open reduction and has no measurable effect on iatrogenic nerve injury
- B. delayed surgery does not affect the rate of infection and significantly increases the rate of compartment syndrome
- C. early surgery significantly reduces the rate of iatrogenic nerve injury and increases the rate of infection
- D. delayed surgery significantly increases the rate of infection and increases the need for open reduction
- E. early surgery does not affect the need for open reduction and has no measurable effect on compartment syndrome**

Charles T. Mehlman, William M. Strub, Dennis R. Roy, Eric J. Wall, Alvin H. Crawford. The Effect of Surgical Timing on the Perioperative Complications of Treatment of Supracondylar Humeral Fractures in Children. *J Bone Joint Surg Am.* 2001;83:323.

34. Which of the following is not a risk factor for supracondylar femoral fracture after total knee replacement:

- A. advanced age
- B. rheumatoid arthritis
- C. anterior notching of the distal femur
- D. male sex**
- E. chronic use of corticosteroids

Douglas A. Dennis. Selected Instructional Course Lecture. Periprosthetic Fractures Following Total Knee Arthroplasty. *J Bone Joint Surg Am.* 2001;83:120.

35. The most likely mechanism of action of low-intensity ultrasound on bone and connective tissues is:

- A. enhanced blood flow to the injury site, but only during exposure to the signal
- B. upregulation of aggrecan expression
- C. induction of a low-level mechanical signal to the bone by acoustic pressure waves**
- D. inhibition of angiogenesis
- E. upregulation of the bone morphogenetic protein transcription pathways

Clinton Rubin, Mark Bolander, John P. Ryaby, Michael Hadjiargyrou. Current Concepts Review. The Use of Low-Intensity Ultrasound to Accelerate the Healing of Fractures. *J Bone Joint Surg Am.* 2001;83:259.

36. Distal clavicle excision is indicated with subacromial decompression for rotator cuff dysfunction and pain when:

- A. there is radiographic evidence of acromioclavicular (AC) joint degeneration with impingement
- B. AC joint instability is the primary cause of AC joint pain with impingement
- C. conservative treatment for AC joint arthralgia and impingement has failed**

- D. positive impingement signs are present with a type-III acromion
- E. MRI shows encroachment into the subacromial space by bone spurs on the inferior surface of the AC joint

Scott David Martin, Thomas E. Baumgarten, James R. Andrews. Arthroscopic Resection of the Distal Aspect of the Clavicle with Concomitant Subacromial Decompression. *J Bone Joint Surg Am.* 2001;83:328.

37. The integrity of the interosseous membrane (IOM) is important to load transmission in the human forearm under which one of the following loading conditions:

- A. after radial shortening procedures
- B. after ulnar lengthening procedures
- C. when a gap exists between the radial head and the capitellum, such as after a radial head excision**
- D. when there is contact between the radial head and the capitellum, such as the normal valgus alignment of the elbow
- E. only with increased loads (>133 newtons) and is relatively inactive at lower loads (<133 newtons)

Michael F. Shepard, Keith L. Markolf, Arati Mallik Dunbar. Effects of Radial Head Excision and Distal Radial Shortening on Load-Sharing in Cadaver Forearms. *J Bone Joint Surg Am.* 2001;83:93.

38. In a goat model, full-thickness osteochondral defects of the medial femoral condyle, measuring 6 millimeters in diameter and depth:

- A. heal with fibrocartilage
- B. heal with articular cartilage
- C. heal with fibrous tissue and bone
- D. do not heal and remain quiescent
- E. do not heal but enlarge and become cavitory**

Douglas W. Jackson, Peggy A. Lalor, Harold M. Aberman, Timothy M. Simon. Spontaneous Repair of Full-Thickness Defects of Articular Cartilage in a Goat Model: A Preliminary Study. *J Bone Joint Surg Am.* 2001;83:53.

39. When a grade-III injury of all posterolateral knee structures occurs in combination with a complete tear of the posterior cruciate ligament, which of the following physical examination findings would be expected?

- A. increased tibial external rotation at 30 but not 90 degrees of flexion
- B. increased tibial external rotation at 90 but not 30 degrees of flexion
- C. no change in tibial external rotation
- D. decreased varus rotation at all angles of flexion
- E. increased tibial external rotation at 30 and 90 degrees of flexion**

Dana C. Covey. Current Concepts Review. Injuries of the Posterolateral Corner of the Knee. *J Bone Joint Surg Am.* 2001;83:106.

40. Intra-articular lipomas of the knee joint:

- A. are very common
- B. rarely exceed the size of a hen's egg**
- C. are histologically identical to lipoma arborescens

- D. do not have a pedicle
E. usually are found in the intercondylar notch
- Keiji Matsumoto, Hidetoshi Okabe, Michihito Ishizawa, Seiji Hiraoka.** Intra-Articular Lipoma of the Knee Joint: A Case Report. *J Bone Joint Surg Am.* 2001;83:101.
- 41. The mechanism of loosening of posterior cruciate substituting total knee prostheses has been demonstrated to be due to:**
- A. transmission of anterior-posterior shear stresses from the cam-post mechanism
B. excessive wear of polyethylene patellar components
C. tibiofemoral impingement in extension
D. initial malalignment of the femoral component
- E. transmission of tibiofemoral rotational stresses**
- Stephen A. Mikulak, Ormonde M. Mahoney, Mylene A. delaRosa, Thomas P. Schmalzried.** Loosening and Osteolysis with the Press-Fit Condylar Posterior-Cruciate-Substituting Total Knee Replacement. *J Bone Joint Surg Am.* 2001;83:398.
- 42. Which of the following factors was most important in orthopaedists' decisions to leave a full-time academic position for private practice?**
- A. tenure considerations
B. institutional and departmental leadership
C. financial compensation and autonomy
D. resources for research
E. patient volume and mix
- Roy A. Meals.** The Orthopaedic Forum. Why Orthopaedic Surgeons Leave Full-Time Academic Positions for Private Practice. *J Bone Joint Surg Am.* 2001;83:456.
- 43. The use of structural allograft to replace bone loss in revision knee arthroplasty is:**
- A. contraindicated due to the inability to gain adequate graft-prosthesis stability
B. durable in the medium term
C. often a failure in the short term due to graft resorption
D. hampered by a high allograft-host nonunion rate
E. contraindicated due to the risk of disease transmission
- M.G. Clatworthy, J. Ballance, G.W. Brick, H.P. Chandler, A.E. Gross.** The Use of Structural Allograft for Uncontained Defects in Revision Total Knee Arthroplasty: A Minimum Five-Year Review. *J Bone Joint Surg Am.* 2001;83:404.
- 44. Which of the following irrigating solutions, when delivered at low pressures, results in the greatest removal of adherent bacteria from bone without compromising osteoblast function:**
- A. normal saline
B. antibiotic
C. povidone
D. soap
E. chlorhexidine
- Mohit Bhandari, Anthony Adili, Emil H. Schemitsch.** The Efficacy of Low-Pressure Lavage with Different Irrigating Solutions to Remove Adherent Bacteria from Bone. *J Bone Joint Surg Am.* 2001;83:412.
- 45. Implant-related hypersensitivity reactions are associated with type-IV delayed-type hypersensitivity (DTH) responses, which are:**
- A. mediated by B cells in response to metal protein complexes
B. mediated by T helper cells in response to metal protein complexes
C. mediated by macrophages in response to particulate metal debris
D. mediated by T cytotoxic cells in response to particulate metal debris
- Nadim Hallab, Katharine Merritt, Joshua J. Jacobs.** Current Concepts Review. Metal Sensitivity in Patients with Orthopaedic Implants. *J Bone Joint Surg Am.* 2001;83:428.
- 46. In a recent study of surgical repair of chronic rotator cuff tears, Cofield et al. found that the size of the tear was an important predictor of outcome. Which of the following factors is not associated with an increased size of the tear?**
- A. older age
B. less preoperative range of motion
C. history of distal clavicle resection
D. handedness
E. increased preoperative weakness
- Robert H. Cofield, Javad Parvizi, Pierre J. Hoffmeyer, William L. Lanzer, Duane M. Ilstrup, Charles M. Rowland.** Surgical Repair of Chronic Rotator Cuff Tears: A Prospective Long-Term Study. *J Bone Joint Surg Am.* 2001;83:71.
- 47. Compared to landing without catching a ball, the upper limb motion of catching a ball during landing resulted**
- A. greater biceps femoris muscle activity relative to vastus lateralis muscle activity, thereby predisposing the anterior cruciate ligament to injury
B. less rectus femoris muscle activity relative to biceps femoris muscle activity, thereby predisposing the anterior cruciate ligament to injury
C. a significantly shorter time between the onset of biceps femoris activity and the onset of rectus femoris activity, thereby predisposing the anterior cruciate ligament to injury
D. a significantly longer time between the onset of biceps femoris activity and the onset of rectus femoris activity, thereby predisposing the anterior cruciate ligament to injury
E. similar onset times between the biceps femoris and rectus femoris muscles, therefore suggesting no change to anterior cruciate ligament injury risk between the two conditions
- E.J. Cowling, J.R. Steele.** The Effect of Upper-Limb Motion on Lower-Limb Muscle Synchrony: Implications for Anterior Cruciate Ligament Injury. *J Bone Joint Surg Am.* 2001;83:35.
- 48. Long-term follow-up after arthrodesis of the ankle shows that degenerative arthritis of other foot joints is common. Which joint is most likely to be affected?**
- A. subtalar
B. calcaneocuboid
C. talonavicular

- D. naviculocuneiform
E. first metatarsal-cuneiform

Lisa M. Coester, Charles L. Saltzman, John Leupold, William Pontarelli. Long-Term Results Following Ankle Arthrodesis for Post-Traumatic Arthritis. *J Bone Joint Surg Am.* 2001;83:219.

49. Revision of a loose femoral component associated with severe bone loss can be accomplished with good long-term (9-15-year) results in over three-quarters of patients using:

- A. any femoral prosthesis combined with oral bisphosphonates
B. any femoral prosthesis combined with ultrasound stimulation
C. a long-stem femoral prosthesis without cement or bone graft
D. **a long-stem femoral prosthesis cemented to a proximal femoral allograft but not to host bone**
E. a long-stem femoral prosthesis/allograft composite cemented to host bone over its distal half only

Hugh R.L. Blackley, Aileen M. Davis, Carol R. Hutchison, Allan E. Gross. Proximal Femoral Allografts for Reconstruction of Bone Stock in Revision Arthroplasty of the Hip: A Nine to Fifteen-Year Follow-up. *J Bone Joint Surg Am.* 2001;83:346.

50. Administration of enoxaparin for 4 weeks following major lower extremity joint replacement surgery:

- A. **reduces the incidence of thromboembolism following total hip replacement**
B. provides no therapeutic benefit in total joint surgery
C. was equally effective as a placebo in reducing the incidence of symptomatic pulmonary embolism in total joint replacement
D. had an unacceptably high rate of neurologic complications
E. was associated with worrisome changes in liver function tests

Philip C. Comp, Theodore E. Spiro, Richard J. Friedman, Thomas L. Whitsett, Gerhard J. Johnson, Geoffrey A. Gardiner, Glenn C. Landon, Maurice Jové. Prolonged Enoxaparin Therapy to Prevent Venous Thromboembolism After Primary Hip or Knee Replacement. *J Bone Joint Surg Am.* 2001;83:336.

BONUS QUESTION (optional)

51. On the axial T1-weighted magnetic resonance image, the normal, intact interosseous membrane of the human forearm most closely re-

sembles the physiognomy of:

- A. Dracula
B. Little Red Riding Hood
C. **The Lone Ranger**
D. Spiderman
E. Howdy Doody

David W. Starch, Eugene J. Dabezies. Magnetic Resonance Imaging of the Interosseous Membrane of the Forearm. *J Bone Joint Surg Am.* 2001;83:235

ANSWER KEY

Correct answers are blacked out.

1. A B C D E	18. A B C D	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	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
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	51. A B C D E

ACCREDITATION STATEMENT

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QUESTIONS?

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