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THE JOURNAL OF BONE & JOINT SURGERY

CONTINUING MEDICAL EDUCATION

CME

REVIEW QUESTIONS

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OCTOBER, NOVEMBER, DECEMBER  
2005

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THE DEADLINE TO SUBMIT YOUR ANSWERS FOR GRADING THIS SET OF QUESTIONS IS APRIL 15, 2006.

## 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 October, November, and December issues of the American volume of *The Journal of Bone and Joint Surgery* (Volume 87-A, Numbers 10, 11, and 12). 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 \$30 per quarter, or \$110 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 April 15, 2006.**

1. **Which of the following factors is the most closely correlated with rapid collapse of an osteonecrotic femoral head?**
  - A. age and activity of the patient
  - B. hyperlipidemia
  - C. alcohol abuse
  - D. large necrotic area (>30% of the femoral head)
  - E. a history of steroid medication
2. **In a randomized, controlled trial that compared quality-of-life outcomes of hemiarthroplasty with those of total shoulder arthroplasty, which of the following statements is most accurate?**
  - A. a high percentage of patients with osteoarthritis had rotator cuff tears
  - B. patients treated with a hemiarthroplasty had better pain relief than those treated with total shoulder arthroplasty
  - C. 20% of patients treated with hemiarthroplasty required conversion to total shoulder arthroplasty during the short-term follow-up period
  - D. it was frequently impossible to insert a glenoid component during the trial
  - E. at two years, both groups had significant improvement in disease-specific quality-of-life scores
3. **When compared with those in controls, the bacterial counts in the operative field following use of an unsterile indelible marker to sign the surgical site prior to skin preparation were:**
  - A. greatly increased
  - B. moderately increased
  - C. unaltered
  - D. moderately decreased
  - E. greatly decreased
4. **Which of the following factors was found to be the most important determinant of restoration of a negative Trendelenburg test following pelvic support osteotomy for congenital dislocation of the hip?**
  - A. younger age at the time of the operation
  - B. advancing the insertion of the gluteus maximus
  - C. male gender
  - D. valgus angulation of the proximal part of the femur
  - E. distal transfer of the greater trochanter
5. **During total knee arthroplasty, the technique that most reliably places the rotational alignment of the femoral component along the trans-epicondylar axis involves:**
  - A. using a posterior condylar referencing jig that externally rotates the femoral component 3° with respect to the posterior condylar axis
  - B. visually determining the line defining the sulcus of the trochlear groove and placing the femoral component perpendicular to this line
  - C. palpating the medial and lateral epicondyles of the femur, visualizing a line joining them, and then orienting the femoral component parallel to this line
  - D. palpating the medial and lateral epicondyles of the femur, digitizing those points with a computer

- navigation system, and using the computer to orient the femoral component along this line
- E. no technique is uniformly superior; rotational alignment depends on the surgeon's skill and preferences
- 6. Pseudoaneurysms of an artery are:**
- A. associated with vessels that lack an internal elastic membrane and muscle wall
- B. a result of full-thickness tears or lacerations of the vessel wall
- C. most commonly due to atherosclerosis
- D. primarily seen in the ascending aorta
- E. sometimes seen following severe exercise
- 7. The primary reason for dismissing an orthopaedic resident demonstrating major clinical or behavioral deficiencies is:**
- A. to make more room for a more-qualified resident
- B. to prevent harm to patients
- C. to keep the other residents happy
- D. to save the hospital money
- E. to set an example so the other residents will fall in line
- 8. Insertional mutagenesis involves integration of an exogenous gene into a cell's genome causing a phenotypic change in that cell. This phenomenon:**
- A. is a common side effect in all gene therapy
- B. is a theoretical concern that has never been documented
- C. may be obviated by site-specific integration of transferred genes
- D. can never occur when nonviral gene transfer is used
- E. is particularly common with adenovirus gene transfer
- 9. The femoral heads of patients with stage-I or II osteonecrosis were treated either with shock waves or with core decompression and bone-grafting. At an average of twenty-five months after the procedure, the shock-wave group:**
- A. required fewer conversions to total hip arthroplasty
- B. had worse pain scores
- C. had worse Harris hip scores
- D. had more complications
- E. had greater progression of the lesions
- 10. A twenty-eight-year-old obtunded male pedestrian is brought in by ambulance after having sustained a collision injury. Examination shows soft-tissue swelling and gross deformity around and distal to the knee. A workup reveals a closed comminuted proximal tibiofibular fracture. A compartment syndrome is suspected, and the decision is made to evaluate the leg compartment pressures. To avoid a falsely elevated pressure reading, which of the following devices should not be used?**
- A. arterial line manometer
- B. Stryker device
- C. slit catheter
- D. straight needle
- E. side-port needle
- 11. Which of the following factors has the strongest negative correlation with a good functional outcome in a child with a pelvic fracture?**
- A. fracture classification
- B. age at time of injury
- C. pelvic asymmetry at time of union
- D. the Modified Injury Severity Score (MISS)
- E. method of treatment
- 12. Ulnar nerve palsy is one of the frequent problems experienced by throwing athletes. Which aspect of the throwing motion is most responsible for strain on the ulnar nerve at the elbow?**
- A. elbow flexion in the stance phase
- B. wrist extension in the cock-up phase
- C. elbow extension in the acceleration phase
- D. wrist flexion in the wind-up phase
- E. elbow flexion in the acceleration phase
- 13. Congenital rib and chest wall anomalies occur most commonly:**
- A. on the concavity of a lumbar or lumbosacral scoliosis as a result of a unilateral failure of vertebral segmentation
- B. on the convexity of a lumbar or lumbosacral scoliosis as a result of a unilateral failure of vertebral segmentation
- C. on the concavity of a thoracic or thoracolumbar scoliosis as a result of a unilateral failure of vertebral segmentation
- D. on the convexity of a thoracic or thoracolumbar scoliosis as a result of a unilateral failure of vertebral segmentation
- E. on the concavity or the convexity of a scoliosis as a result of a unilateral failure of vertebral formation
- 14. In an evaluation performed to determine whether a patient with a severely injured lower extremity is a candidate for reconstruction or amputation, the initial plantar sensory examination is:**
- A. an important variable that the surgeon needs in order to use one of the limb salvage scores to help to decide the treatment
- B. irrelevant, as patients typically regain normal sensation over time
- C. unrelated to the final functional outcome
- D. a critical examination as an insensate limb needs to be amputated
- E. predictive of functional recovery: patients with normal sensation recover faster and have better return-to-work rates than do those without sensation
- 15. A retrospective study of patients who sustained motor nerve palsy following total hip arthroplasty demonstrated a higher prevalence of this complication in all of the following except:**
- A. patients with a diagnosis of developmental dysplasia
- B. hips with cemented fixation

- C. patients seen after 1989  
 D. patients with posttraumatic arthritis  
 E. patients treated with a posterior surgical approach
- 16. In an analysis of the levels of evidence of articles published in nine orthopaedic journals, the largest percentage of articles were described as:**
- A. therapeutic level 3  
 B. therapeutic level 1  
 C. prognostic level 2  
 D. therapeutic level 4  
 E. economic and decision analysis level 2
- 17. All of the following were found to be predictors of curve progression in girls with adolescent idiopathic scoliosis except:**
- A. a younger age at diagnosis  
 B. premenarche  
 C. osteopenia of the femoral neck  
 D. lower Risser grade  
 E. obesity
- 18. When striking a nail with a hammer, which of the following occurs as the wrist moves through its range of motion?**
- A. the scaphoid extends and the lunate flexes  
 B. scaphoid rotation is maximal  
 C. the scaphoid flexes and the lunate extends  
 D. scaphoid and lunate rotation is minimal  
 E. lunate rotation is maximal
- 19. At nine years following a primary total hip arthroplasty, a patient presents with acute groin pain. He has recently undergone a cystoscopy for a benign bladder condition. On physical examination, he has an irritable hip and severe pain with a range of motion. Radiographs reveal a well-fixed cementless total hip prosthesis. Laboratory tests reveal a white blood-cell count of  $5.0 \times 10^9/L$ , an erythrocyte sedimentation rate of 60 mm/hr, and a C-reactive protein level of 20 mg/L. The most appropriate next step in the evaluation of this patient is:**
- A. immediate initiation of high-dose oral or intravenous antibiotics and reevaluation in forty-eight hours  
 B. referral of the patient for an infectious disease consultation  
 C. examination of the hip with the patient under general anesthesia  
 D. performance of magnetic resonance imaging of the hip  
 E. performance of a fluoroscopy-guided hip aspiration, with the fluid sent for culture and sensitivity testing
- 20. Regarding the administration of vitamin D to ambulatory institutionalized individuals, which of the following statements is most true?**
- A. compared with calcium or a placebo, vitamin D at a dose of 700 to 800 IU/day has been shown to reduce nonvertebral fractures by approximately 23%
- B. vitamin D at a dose of 400 IU/day has the same effect with regard to reducing the rate of nonvertebral fractures as does a higher dose (800 IU/day)
- C. vitamin D has no role in preventing osteoporotic fractures in the elderly
- D. vitamin D is the best option for preventing osteoporotic fractures in the elderly
- E. vitamin D can be used as a substitute for walking, exercising, and exposure to sunlight
- 21. A young man presents with a bicortical fracture of the waist of the scaphoid. Compared with treatment with a below-the-elbow plaster cast, immediate internal fixation:**
- A. allows the patient to return to work earlier  
 B. achieves a higher rate of union  
 C. is more technically straightforward  
 D. leads to a stronger grip in the end  
 E. results in fewer symptoms and less disability
- 22. When cementless calcar-replacement hemiarthroplasty was compared with intramedullary fixation for the treatment of unstable intertrochanteric fractures in elderly patients, hemiarthroplasty:**
- A. resulted in better function at two years postoperatively  
 B. was less expensive  
 C. required a shorter operating time  
 D. was associated with more blood loss  
 E. was associated with a lower mortality rate
- 23. The theoretic reduction of stress at the metal tibial tray-tibial bone interface of a mobile-bearing total knee prosthesis is achieved by:**
- A. increasing the congruence of the superior surface of the polyethylene with the femoral component  
 B. use of a posterior-stabilized design  
 C. use of a posterior cruciate-retaining design  
 D. allowing for rotation between the inferior polyethylene surface and the metallic tibial tray  
 E. meticulous attention to equalization of flexion and extension gaps intraoperatively
- 24. Which of the following dominates the response of cartilage to compressive loads:**
- A. proteoglycan content  
 B. collagen content  
 C. permeability  
 D. interaction of proteoglycans, collagen, and water  
 E. cellular and proteoglycan content
- 25. With regard to radiographic evaluation of the cervical spine in patients with a high-energy injury, which of the following statements is least true:**
- A. adequate plain radiographs are difficult to make of patients who have sustained high-energy trauma  
 B. adequate plain radiographs often miss injuries that are identified on helical computed tomography images  
 C. purely ligamentous injuries can still be present despite normal findings on plain radiographs and/or helical computed tomography images

- D. if helical computed tomography of the cervical spine shows no acute process, plain radiographs provide additional information
- E. if helical computed tomography of the cervical spine shows no acute process, plain radiographs provide no additional information
- 26. After discussing the risks and benefits of a complex procedure, an orthopaedic surgeon should document that informed consent was obtained. The method of documentation that is most associated with decreased legal liability was found to be:**
- A. a signed consent form
- B. a nurse's witness note
- C. a dictated office note
- D. a procedure note
- E. a handwritten note from the patient
- 27. Which of the following is true regarding treatment of pelvic fractures in skeletally immature patients?**
- A. closed reduction with a spica cast is adequate treatment in most cases
- B. substantial remodeling will not occur in the first few years after injury
- C. anterior external fixation is not necessary for type-C fractures
- D. reduction and internal fixation is not necessary
- E. level I research studies have established the correct treatment for displaced fractures
- 28. In a comparison of the costs of ultrasonographic hip examination with the costs of clinical assessment alone for the diagnosis and management of developmental hip dysplasia in the United Kingdom, it was found that:**
- A. ultrasonographic examination significantly increased the average health-care costs per patient
- B. ultrasonographic examination significantly reduced the average health-care costs per patient
- C. ultrasonographic examination did not significantly affect health-care costs but reduced family-incurred costs associated with splinting
- D. ultrasonographic examination did not significantly affect health-care costs and increased family-incurred costs associated with splinting
- E. ultrasonographic examination did not significantly affect health-care costs or family-incurred costs associated with splinting
- 29. Congenital rib anomalies, either simple or complex:**
- A. do not have an adverse effect on the size or the rate of progression of congenital scoliosis
- B. have an adverse effect on the size or the rate of progression of congenital scoliosis
- C. have an adverse effect on the size but not the rate of progression of congenital scoliosis
- D. have an adverse effect on the rate of progression but not the size of congenital scoliosis
- E. have an adverse effect on the size or the rate of progression of congenital kyphosis
- 30. When a group of obese children who underwent surgical treatment of a femoral fracture were compared with nonobese counterparts, the obese children were found to have:**
- A. a higher prevalence of thrombophlebitis
- B. a higher prevalence of pneumonia
- C. a higher rate of complications
- D. longer operating times
- E. poorer functional outcomes
- 31. Medical conditions such as thrombocytopenia-absent radius syndrome and Holt-Oram syndrome are associated with:**
- A. only classic radial longitudinal dysplasia
- B. classic and proximal radial longitudinal dysplasia
- C. only ulnar longitudinal dysplasia
- D. severe combined dysplasia
- E. both ulnar and radial longitudinal dysplasia
- 32. What is the most common symptom in patients with idiopathic ulnar impaction syndrome?**
- A. ulnar wrist pain
- B. decreased range of motion
- C. weakness of grip
- D. swelling of the wrist
- E. clicking of the wrist
- 33. The highest concentrations of osteoprogenitor stem cells were found in bone marrow aspirates of the:**
- A. iliac crest
- B. vertebral bodies at the site of pedicle screw preparation
- C. A and B
- D. proximal part of the tibia
- E. distal part of the femur
- 34. In a sheep model in which a layer of partially débrided noncalcified articular cartilage was left inside a microfracture defect, what were the consequences on repair at six months?**
- A. resorption of the nonmineralized articular cartilage layer
- B. complete lack of repair over the partially débrided nonmineralized cartilage
- C. detachment of residual noncalcified cartilage
- D. chondrogenesis and growth of hyaline cartilage from the nonmineralized cartilage
- E. subchondral bone necrosis
- 35. During ulnar deviation of an uninjured wrist, which of the following combinations best describes normal carpal kinematics?**
- A. the scaphoid and lunate extend
- B. the scaphoid flexes and the lunate extends
- C. the scaphoid and lunate flex
- D. the scaphoid extends and the lunate flexes
- E. scaphoid and lunate motion is minimal
- 36. The cost-effectiveness of operative compared with nonoperative management of displaced intra-articular calcaneal fractures, in terms of cost/quality-adjusted life years gained, is most sensitive to changes in**

- which variable through a clinically relevant range?**
- the mortality rate
  - the cost of subtalar arthrodesis
  - the operative complication rate
  - the cost of operative treatment
  - the cost of time lost from work
- 37. During preoperative templating for a revision total hip arthroplasty, the surgeon notes extensive bone loss in the femoral neck and calcar region, as far distally as the entire lesser trochanter. The optimal management of this form of bone loss is:**
- placement of the collar of a standard femoral component at the lower level of host bone and use of a long skirted femoral head to reestablish the hip center
  - use of a proximal femoral allograft to reconstruct the defect
  - use of cement to fill the defect
  - use of cancellous bone graft to fill the defect
  - use of a 30-mm calcar replacement in order to restore the hip center and avoid the use of a long skirted ball
- 38. The potential benefits of ximelagatran compared with warfarin for the prevention of venous thromboembolism after total knee arthroplasty are:**
- increased efficacy
  - no requirement for coagulation monitoring
  - no requirement for dosage adjustment
  - no clinically known relevant interactions with food
  - all of the above
- 39. A thirty-year-old right-handed man sustains a closed extra-articular fracture of the right fifth metacarpal shaft. The fracture is reduced, followed by application of a cast that holds the metacarpophalangeal joints in extension and allows full proximal interphalangeal joint motion. The cast is removed at five weeks after the injury. One month following cast removal, the patient can expect:**
- residual loss of flexion at the metacarpophalangeal joint
  - malunion resulting from loss of reduction
  - residual loss of extension at the proximal interphalangeal joint
  - better function than what would have followed immobilization with the metacarpophalangeal joints flexed and the interphalangeal joints extended
  - strength comparable with that following immobilization with the metacarpophalangeal joints flexed and the interphalangeal joints extended
- 40. The most critical factor associated with the successful treatment of an infection at the site of a total knee arthroplasty with débridement and retention of the prosthesis is:**
- expeditious treatment (less than forty-eight hours after the onset of the infection)
  - copious irrigation with antibiotic solution
  - infection due to *Staphylococcus aureus*
  - infection due to gram-negative organisms
  - cementless implants
- 41. A higher cumulative rate of first-time dislocations following primary total hip arthroplasty was associated with:**
- a 32-mm-diameter prosthetic femoral head
  - an anterolateral approach
  - a transtrochanteric approach
  - a 22-mm-diameter prosthetic femoral head
  - a 28-mm-diameter prosthetic femoral head
- 42. In a canine model, chronic detachment of the infraspinatus muscle resulted in all of the following except:**
- a stiffer muscle
  - a smaller muscle
  - a muscle infiltrated with fat
  - a decrease in load generation for the same amount of stretch compared with that associated with a normal muscle
  - a similar shape of the passive load-displacement curve when compared with that of a normal muscle
- 43. In the state of New York, the vast majority of spinal fusion procedures performed in children and adolescents with scoliosis from 1992 to 2001 were done by:**
- orthopaedic surgeons who performed five or fewer spinal fusions annually
  - orthopaedic surgeons who performed more than five spinal fusions annually
  - orthopaedic surgeons who performed more than fifty spinal fusions annually
  - orthopaedic surgeons who had received fellowship training in spine surgery
  - orthopaedic surgeons who had not received any fellowship training
- 44. In a retrospective study of a total knee arthroplasty design, radiographic evidence of periprosthetic osteolysis was significantly associated with all of the following factors except:**
- the method of forming the polyethylene tibial insert
  - the initial thickness of the polyethylene tibial insert
  - the method of sterilizing the polyethylene tibial insert
  - the shelf life of the polyethylene tibial insert
  - the finish of the tibial baseplate counterface to which the polyethylene insert was affixed
- 45. What is the most important predictor of survival and local recurrence after treatment of patients with sacrococcygeal chordoma?**
- response to radiation therapy
  - complete resection with wide tumor-free margins
  - a combined anterior and posterior surgical approach
  - addition of chemotherapy to surgery
  - addition of radiation therapy to surgery

**46. To assess the effects of a learning curve, the authors of a recent study compared the prevalence of complications associated with their first forty-two two-incision minimally invasive total hip replacements with their second forty-nine. The first group had:**

- A. fewer overall complications
- B. no difference in the reoperation rate
- C. no difference in the component revision rate
- D. a higher rate of thigh numbness
- E. a higher mortality rate

**47. Several systems for classification of osteomyelitis have been published. The best way to differentiate between chronic and acute osteomyelitis is:**

- A. with histological analysis
- B. on the basis of clinically persisting or recurrent infection
- C. with diagnostic imaging
- D. on the basis of laboratory parameters
- E. with magnetic resonance imaging

**48. A sixty-five-year-old woman presents with symptoms related to arthrosis of the trapeziometacarpal joint. All of the following regarding the disease are true except:**

- A. it seems to be an inevitable part of aging, particularly in women, >90% of whom will have arthrosis by the age of eighty years
- B. women are more likely to have arthrosis than are men of similar age
- C. arthrotic degeneration occurs earlier in women than it does in men
- D. after the age of eighty years, most women have advanced arthrosis of the trapeziometacarpal joint
- E. advanced arthrosis of the trapeziometacarpal joint nearly always causes severe pain that must be treated surgically

**49. Patients with multiple blunt injuries frequently require operative stabilization of an associated femoral shaft fracture. Which statement regarding reamed compared with**

**unreamed intramedullary femoral nailing is true?**

- A. experimental studies of animals have shown that, in the presence of a lung contusion, the method of fixation of a femoral shaft fracture has no significant effect on pulmonary function
- B. experimental studies of animals have shown that, in the presence of a lung contusion, reamed intramedullary nailing is associated with a significantly decreased activation of the coagulation and fibrinolytic cascade compared with unreamed femoral nailing
- C. the systemic inflammatory response following intramedullary femoral reaming is independent of reamer velocity, shape, and design
- D. experimental studies of animals have shown that the use of a reaming system that provides concomitant irrigation and aspiration of intramedullary contents is associated with significantly decreased pulmonary edema and a decreased activation of the coagulation and fibrinolytic cascade
- E. clinical studies have demonstrated sufficient evidence that the use of a reaming system that provides concomitant irrigation and aspiration of intramedullary contents is associated with a significantly decreased rate of pulmonary complications

**50. In a study in which 100 patients were followed for a mean of five years following revision of a total hip arthroplasty or total knee arthroplasty with a total femur prosthesis, the authors found excellent stability and function of the knee and attributed it to:**

- A. an anatomic patellar flange
- B. a diagnosis of osteoarthritis
- C. use of a hinged or rotating platform design
- D. use of an allograft patellar replacement
- E. daily physiotherapy for three months

**Conflict of Interest**

The author of these CME questions does not have any financial conflict of interest with regard to the subject matter discussed in these review questions.

**RESPONSE FORM**

**EXAMINATION EVALUATION**

Did the January 2006 CME Review Questions meet these educational objectives\*:

1. Provide a broad-based review and update specifically in the areas of orthopaedic research and trauma?  
 Yes  No
2. Strengthen your problem-solving abilities related to patient care particularly in the area of trauma?  
 Yes  No
3. Make you aware of new advances in orthopaedic surgical techniques and technology?  
 Yes  No

Comments (please comment on the quality of the questions and their relationship to your practice): \_\_\_\_\_

\*Note: These objectives will change every quarter.

**SURVEY (optional)**

1. Which of the following best describes your practice type?
  - General orthopaedics
  - General orthopaedics with subspecialty interest
  - Exclusively subspecialty
  - Resident or student
  - Researcher
  - Other: \_\_\_\_\_
2. What are your specialty interests? Please rank in order of importance (1 = highest importance).
 

____ Adult	____ Spine
____ Geriatric	____ Hand
____ Pediatric	____ Rheumatology
____ Rehabilitation	____ Foot and Ankle
____ Sports	____ Other: _____
____ Trauma	
3. Which is your number-one priority to read when you receive *The Journal* (American volume only) each month?
 

<input type="checkbox"/> Commercial advertising	<input type="checkbox"/> Current Concepts
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<input type="checkbox"/> Clinical scientific articles	<input type="checkbox"/> Basic scientific articles
<input type="checkbox"/> Orthopaedic Forum	<input type="checkbox"/> Instructional Course Lectures

**ACCREDITATION STATEMENT**

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the American Academy of Orthopaedic Surgeons (AAOS) and *The Journal of Bone and Joint Surgery* (JBJS). The AAOS is accredited by the ACCME to provide continuing medical education for physicians. The AAOS designates this educational activity for up to 10 hours of category-1 credit toward the AMA Physicians' Recognition Award. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

The deadline to submit your answers for grading this set of questions is April 15, 2006.

**QUESTIONS?**

For payment questions, contact the Subscription Department at 781-449-9780, x140. For questions regarding submitted tests, contact Melissa Viola at 781-449-9780, x124. E-mail all other questions to cme@jbjs.org.

**ANSWER KEY**

**Black out the correct answers**

- |               |               |                                   |
|---------------|---------------|-----------------------------------|
| 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 | <b>CME Credits Claimed*</b> _____ |

\*Required. Please enter the number of CME credit hours you are claiming for this exam. You must complete this field to receive CME credit.

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