**Course Change Proposal**

**Form A**

<table>
<thead>
<tr>
<th>Academic Group (College):</th>
<th>Academic Organization (Department):</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and Human Services</td>
<td>Physical Therapy</td>
<td>2/8/2011</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Course Proposal:</th>
<th>Department Chair:</th>
<th>Submitted by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>New ___ Change x__ Deletion ___</td>
<td>Dr. McGinty</td>
<td>Dr. Barakatt</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Does this course fulfill a requirement for single-subject or multiple subject credential students?</th>
<th>For Catalog Copy:</th>
<th>Semester Effective:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ___ No x__</td>
<td>Yes x__ No ___</td>
<td>Fall x__ Spring ___ 2012</td>
</tr>
</tbody>
</table>

| CCE (Extension): | |
|------------------||
| Yes ___ No x__ |

This course replaces experimental course Subject Area *(prefix)* and Catalog Nbr *(course number)*:

If changing an existing course, should new version be considered a repeat of the original version? If so, the same Course ID will be maintained. If not, a new Course ID will be assigned. Note: In PeopleSoft terminology, the Course ID is the unique system identifier, not the Catalog Nbr.

<table>
<thead>
<tr>
<th>Change from:</th>
<th></th>
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<tbody>
<tr>
<td>Subject Area <em>(prefix)</em> &amp; Catalog Nbr *(course no.):</td>
<td></td>
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<tr>
<td>PT 220</td>
<td>Therapeutic Exercise I</td>
</tr>
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<td>Subject Area <em>(prefix)</em> &amp; Catalog Nbr *(course no.):</td>
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<tr>
<td>PT 620</td>
<td>Physical Therapy Interventions I</td>
</tr>
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<table>
<thead>
<tr>
<th>Units:</th>
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<tr>
<td>3</td>
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**JUSTIFICATION:**

This course is being changed as part of the curriculum changes with the new DPT program required for continued accreditation for the program. The course has been upgraded to reflect the expectations in a doctoral program.

**NEW COURSE DESCRIPTION:** (Not to exceed 80 words, and language should conform to catalog copy. See http://www.csus.edu/umanual/acad.htm - Guidelines for Catalog Course Description)

In this course students learn, practice and demonstrate the clinical application of basic exercise regimens for the prevention of limitations, improvement of functional abilities and the treatment of disorders associated with the neuromuscular, skeletal and cardiopulmonary systems. In addition, the application of motor control principles to exercise and aquatic therapy are addressed. Open to Physical Therapy majors only.

**Note:**

**Prerequisite:**

<table>
<thead>
<tr>
<th>BIO 633</th>
<th>Human Gross Anatomy for Physical Therapists</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT 600</td>
<td>Pathokinesiology</td>
</tr>
<tr>
<td>PT 602</td>
<td>Evidence Informed Practice I</td>
</tr>
<tr>
<td>PT 608</td>
<td>PT/Patient/Professional Interactions</td>
</tr>
<tr>
<td>PT 630</td>
<td>Pathophysiology</td>
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<tr>
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**Corequisite:**

<table>
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<tr>
<th>PT 604</th>
<th>Principles of Human Movement</th>
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<tr>
<td>PT 606</td>
<td>Therapeutic Measurements and Techniques</td>
</tr>
<tr>
<td>PT 614</td>
<td>Neuroscience for Physical Therapists</td>
</tr>
<tr>
<td>PT 618</td>
<td>Foundations for Patient Management</td>
</tr>
<tr>
<td>PT 622</td>
<td>Evidence Informed Practice II</td>
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</table>

<table>
<thead>
<tr>
<th>Enforced at Registration:</th>
<th>Yes ___ No x</th>
</tr>
</thead>
</table>

**Graded:** Letter x__ Credit/No Credit

**Instructor Approval Required?** Yes ___ No x__

**Course Classification (e.g., lecture, lab, seminar, discussion):**

<table>
<thead>
<tr>
<th>Lecture and Lab C-02; C16</th>
</tr>
</thead>
</table>

**Title for CMS (not more than 30 characters):**

<table>
<thead>
<tr>
<th>Phys Ther Interventions I</th>
</tr>
</thead>
</table>

Cross Listed?  
Yes ___  No ___  
If yes, do they meet together and fulfill the same requirement, and what is the other course?

| How Many Times Can This Course be Taken for Credit? | ___ once__ |
| Can the course be taken for Credit more than once during the same term? | Yes ___  No ___ |

FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:

**Description of the Expected Learning Outcomes:** Describe outcomes using the following format: “Students will be able to: 1), 2), etc.” See the example at http://www.csus.edu/acaf/example.htm

At the completion of this course the student will have an introductory understanding of:

**Goal 1.0:**  
Demonstrate Professional Physical Therapist Effectiveness

1.1 Compare and contrast normal biological, physiological, and psychological mechanisms of the human body with pathophysiological factors that lead to impaired body functions and structure.
   1.1.1 Discuss the etiology and clinical features of major disorders.
      1.1.1.1 Provide the scientific and theoretical basis of therapeutic exercise, including the physiologic adaptations of the neuromusculoskeletal and cardiopulmonary systems, principles of neuromuscular control, pharmacology for specific populations and impact on exercise prescription, specific principles of training, training methods and the factors which influence training.

1.2 Determine the physical therapy needs of any individual seeking services.
   1.2.1 Perform an effective and efficient systems review screen.
   1.2.2 Review pertinent medical records and conduct a comprehensive patient interview.

1.3 Develop a plan of care based on the best available evidence and that considers the patient’s personal and environmental factors.
   1.3.2 Write measurable, functional goals that are time referenced with expected outcomes.
      1.3.2.1 Establish realistic and measurable exercise goals with specific length of time for achievement.

1.3.3 Determine a patient prognosis by predicting the level of optimal improvement in function and the amount of time required to achieve that level.
   1.3.3.1 Select therapeutic exercises with the greatest potential for achieving identifiable time-referenced goals and with minimal risk of adverse response

1.4 Implement the physical therapy plan of care designed to restore and/or maintain optimal function applying selected procedural interventions that demonstrate safe and effective psychomotor and clinical reasoning skills.
   1.4.1 Perform efficient and effective procedural interventions utilizing evidence-informed physical therapy procedures in a competent manner.
      1.4.1.1 Demonstrate timely identification and instruction an appropriate therapeutic exercise application
   1.4.2 Modify or redirect selected procedural interventions in light of reexaminations and/or patient/client’s response to interventions.
      1.4.2.1 Examine indications, contraindications, and potential adverse responses to therapeutic exercise.
      1.4.2.2 Demonstrate the knowledge of the progression of vigor of therapeutic exercise regimens and demonstrate the ability to progress exercises appropriately.
   1.4.3 Instruct the patient/client or caregiver in exercises, postures, handling techniques, home exercises consistent with patient/client diagnosis, prognosis, and expected outcomes, to facilitate patient/client progress, to maintain patient/client status, or to slow deterioration.
      1.4.3.1 Demonstrate the ability to instruct a patient/client in an exercise program that may include:
         1.4.3.1.1 Strengthening techniques (isometric, isokinetic and isotonic exercise).
         1.4.3.1.2 Auto stretch and self mobilization techniques
         1.4.3.1.3 Aerobic exercise techniques
         1.4.3.1.4 Aquatic therapy
         1.4.3.1.5 Plyometrics
         1.4.3.1.6 Posture training
         1.4.3.1.7 Proprioceptive neuromuscular facilitation techniques
   1.4.4 Assess patient/client progress towards goals/projected outcomes.
      1.4.4.1 Monitor, assess, and respond to changes in the patient status during the performance of therapeutic exercise programs

1.5 Demonstrate effective verbal and written communication skills with patients, families, other health care professionals, and the public, to facilitate interventions and interdisciplinary interactions and cooperation.
   1.5.1 Determine appropriate documentation for the recording of patient/client information consistent with professional standards, the fiscal intermediary, and the treatment setting.
1.5.2 Produce quality documentation in a timely manner to support the delivery of physical therapy services.
1.5.3 Demonstrate thorough, concise documentation consistent with current language from the Patient Management Model contained in the most recent edition of the Guide to Physical Therapist Practice.
1.5.4 Communicate efficiently and effectively with other health care providers involved in the patient/client’s management.

1.9 Engage in education activities consistent with imparting information and knowledge unique to the expertise of physical therapists to individuals or groups using relevant and effective teaching methods.
1.9.1 Promote health behaviors through educational interventions and modeling.
1.9.1.1 Through the instruction of therapeutic exercise programs
1.9.2 Apply basic educational concepts of teaching to the practice of physical therapy.
1.9.2.1 During the instruction of therapeutic exercise programs
1.9.4 Present topics/issues using current evidence and sound teaching principles (i.e. case studies, in-service, journal article review, etc).
1.9.4.1 Presentation to peers of a case study emphasizing the role of therapeutic exercise played in the rehabilitation process.

Goal 2.0: Demonstrate Professional Behaviors

2.1 Recognize cultural, ethnic, age, economic, and psychosocial differences and apply a humanistic and holistic approach to the delivery of a clinical service.
2.1.1 Practice physical therapy demonstrating cultural competence with all individuals and groups.
2.1.3 Respect personal space of patients/clients and others.
2.1.4 Demonstrate behaviors that are non-judgmental with regards to patients/clients’ lifestyles.

2.2 Communicate effectively for varied audiences and purposes.
2.2.1 Demonstrate effective interpersonal (verbal, nonverbal, electronic) communication skills considering the diversity of populations and environments.
2.2.1.1 Demonstrate the ability to effectively communicate an exercise program to a patient
2.2.1.2 Demonstrate the ability to effectively communicate an exercise program to health care professionals
2.2.2 Facilitate therapeutic communication and interpersonal skills.

2.5 Demonstrate entry level generic abilities, including:
2.5.1 Professional accountability and commitment to learning.
2.5.1.1 Appropriately completing and promptly turning in assignments.
2.5.3 Effective use of constructive feedback.
2.5.3.1 Adequately revise assignment based on feedback provided
2.5.4 Effective use of time and resources.
2.5.4.1 Effectively work with colleagues on scholarly activities

Goal 4.0: Demonstrate Scholarship

4.1 Apply basic principles of statistics and research methodologies within the practice of physical therapy.
4.1.3 Critically evaluate and interpret professional literature as it pertains to practice, research, and education.

**Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Dean's office, not Academic Affairs.

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graded on one of four case studies</td>
<td>20</td>
</tr>
<tr>
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<td>10</td>
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<tr>
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<tr>
<td>Written: 80 pt. (50 pt. objective + 30 pt. patient problem)</td>
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<td>100</td>
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<td>Group contribution to “400 exercises”</td>
<td>15</td>
</tr>
<tr>
<td>Group Rehabilitation Presentation</td>
<td>15</td>
</tr>
</tbody>
</table>
For whom is this course being developed?
Majors in the Dept. _x_  Majors of other Depts ___  Minors in the Dept. ___  General Education ___  Other ___
Is this course required in a degree program (major, minor, graduate degree, certificate)? Yes _x_  No ___
If yes, identify program(s): DPT

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes ____  No _x_ ___
If yes, attach a description of resources needed and verify that resources are available.

Indicate which department or programs will be affected by the proposed course (if any). ___________  Physical Therapy

The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.

Approvals: If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

Signatures:                      Date
Department Chair:               2-16-11
[Signature]
College Dean or Associate Dean:  2-16-11
[Signature]
CPSP (for school personnel courses ONLY)
[Signature]
Associate Vice President
and Dean for Academic Programs
[Signature]

Distribution: Academic Affairs (original), Department Chair and College Dean. Dean’s office to send original after approval to Academic Affairs, at mail zip 6016. An electronic copy must also be sent.

9/10/2008
CALIFORNIA STATE UNIVERSITY, SACRAMENTO
College of Health and Human Services
Department of Physical Therapy

PT 620 – Physical Therapy Interventions I

Spring Semester

COURSE CREDIT: 3 units (2 hours lecture, 3 hours laboratory per week)

INSTRUCTOR: TBA

LOCATION: TBA

TIME: TBA

COURSE DESCRIPTION:
In this course students learn, practice and demonstrate the clinical application of basic exercise regimens for the prevention of limitations, improvement of functional abilities and the treatment of disorders associated with the neuromuscular, skeletal and cardiopulmonary systems. In addition, the application of motor control principles to exercise and aquatic therapy are addressed. Open to Physical Therapy majors only.

PREREQUISITES
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PT 600 Pathokinesiology
PT 602 Evidence Informed Practice I
PT 604 Principles of Human Movement
PT 606 Therapeutic Measurements & Techniques
PT 608 PT/Patient/Professional Interactions
PT 630 Pathophysiology
PT 614 Neuroscience for PTs
PT 618 Foundations for Patient Management
PT 220 PT Interventions I
PT 222 Evidence Informed Practice II
PT 632 Pharmacology
PT 632 Diagnostic Imaging for PT
PT 636 Geriatrics/Gerontology for PT
PT 638 Health, Wellness, & Ergonomics in Physical Therapy

CO-REQUISITES
PT 225 Musculoskeletal Evaluation & Treatment I
PT 226 Clinical Agents
PT 224 Adult Neuromuscular Patient Management I
PT 246 Acute Care and Cardiopulmonary PT

REQUIRED TEXT:
http://davisplus.fadavis.com/kisner/videos.cfm

**COURSE OBJECTIVES:**

All course objectives reference the overall educational goals and outcomes of the Department of Physical Therapy.

At the completion of this course, the student is expected to be able to:

**Goal 1.0:** **Demonstrate Professional Physical Therapist Effectiveness**

1.1 Compare and contrast normal biological, physiological, and psychological mechanisms of the human body with pathophysiological factors that lead to impaired body functions and structure.

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TEACHING STRATEGIES AND LEARNING TECHNIQUES:

Course objectives will be met by observing the following methods of instruction:

1. Lecture and laboratory demonstrations
2. Independent and group practice of exercise techniques
3. Assigned readings
4. 4 Case studies done throughout the semester. One will be presented for a grade
5. Rehab presentation
6. Guest lectures
7. Field Trips [Aquatics and Sports PT]

GRADING PROCEDURES:

<table>
<thead>
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<th>Points</th>
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</tr>
<tr>
<td>TOTAL</td>
<td>260</td>
</tr>
</tbody>
</table>

Lab attendance and participation are required. Missing labs may result in a final grade reduction, as determined by instructor, as well as having to perform makeup lab assignments.

Students must achieve at least 80% on case study and rehabilitation presentations, otherwise remediation work, as determined by instructor, will need to be successfully completed.

PRACTICAL EXAMINATION:

Practical examinations will test the student's ability to design treatments and defend treatment choices. For both the midterm and final practical exams each student will have 10 min to perform evaluation and treatment techniques in a safe and effective manner. Explanations related to treatment choices and demonstrations of the ability to progress treatment will be expected. Failure to execute a specific technique safely will result in points deducted or failing grade on that practical exam.

Students must achieve a minimum average of 80% on each practical examination. If a student fails to achieve this minimum grade, he/she will be required to take a second practical
examinations in the skill category in which the failure occurred. If the student achieves a passing grade on the second practical examination, the final score for the practical will be the score received on the first practical exam. If the student does not receive a passing grade on the second practical examination, the student will receive a 0% grade for the second examination, and he/she will receive an average of the first and second examination grades as their final score for the practical. The student will then be required to perform remediation appropriate to the deficiency as determined by the course instructor. The remediation must successfully be completed by the end of regularly scheduled classes of the semester in which the remediation is assigned. If the remediation is not successfully completed, the student will receive an F grade for the course, regardless of the scores on other examinations.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
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<tbody>
<tr>
<td>A</td>
<td>242-260</td>
</tr>
<tr>
<td>A-</td>
<td>234-241</td>
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<tr>
<td>B+</td>
<td>226-233</td>
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<tr>
<td>B</td>
<td>216-225</td>
</tr>
<tr>
<td>B-</td>
<td>208-215</td>
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<tr>
<td>C</td>
<td>200-207</td>
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<tr>
<td>C-</td>
<td>190-199</td>
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<tr>
<td>D+</td>
<td>174-181</td>
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<tr>
<td>D</td>
<td>164-173</td>
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<tr>
<td>D-</td>
<td>156-163</td>
</tr>
<tr>
<td>F</td>
<td>&lt;156</td>
</tr>
</tbody>
</table>

Attendance: Daily attendance and timeliness is expected. Courtesy and professional responsibility requires notification of the instructor for any absence in advance. Failure to notify the professor of an absence can result in lowering your participation grade and is considered unprofessional. Students are responsible for any missed work and may be required to complete make-up assignments.

Behavioral expectations: Students are responsible for appropriate behaviors as defined by the generic abilities. Failure to comply with behavioral expectations during class may result in a student first being warned that behavior is inappropriate, then, if inappropriate behavior continues, a student may be asked to leave a class. Repeated failure to comply with behavioral expectations can lead to failure in the course. Cell phones and beepers should be off or silent (set to vibration mode) during the class. No text messaging is permitted in class.

Special accommodations: During the course of the year, some students may utilize prearranged accommodations. If you are a student with a learning disability, physical disability, or other special needs, please let me know as soon as possible if you need special accommodation. These kinds of confidential discussions are best handled during my office hours or by special appointment. You can expect confidentiality and cooperation regarding any circumstances and needs that have been verified though the Office of Services to Students with Disabilities (SSWD).

**TENTATIVE SCHEDULE:**

<table>
<thead>
<tr>
<th>Dates</th>
<th>Topics</th>
<th>Readings</th>
</tr>
</thead>
</table>
| Week 1: | Introduction, Therapeutic Exercises  
|        | Hip and Knee exercises | Kisner & Colby Chapters 1, 20, 21 |
| Week 2: | Soft tissue, connective tissue and joint disorders;  
|        | Cervical spine and shoulder exercises | Kisner & Colby Chapters 10, 11, 14, 16, 17 |
| Week 3: | Stretching, range of motion, PNF, and relaxation; Lumbar spine and ankle exercises | Kisner & Colby Chapters 3, 4, 14, 16, 22 |
| Week 4: | Strength theory and strength protocols;  
|        | Thoracic spine, elbow, wrist and hand exercises | Kisner & Colby Chapters 6, 18, 19 |
| Week 5: | Strength protocols; Trunk stabilization and strengthening exercises | Kisner & Colby Chapters 6, 16 |
| Week 6: | Stabilization; Trunk and scapular stabilization exercises | Kisner & Colby Chapters 14, 16, 17 |
| Week 7: | Practical Examination and Midterm Examination | |
| Week 8: | Aerobic testing, exercise planning, and exercise prescription | Kisner & Colby Chapter 7 |
| Week 9: | Proprioceptive Neuromuscular Facilitation | Kisner & Colby Chapter 6 |
| Week 10: | Proprioceptive Neuromuscular Facilitation  
|         | Aquatic Exercise | Kisner & Colby Chapter 9 |
| Week 11: | Myofascial Pain; Osteoporosis | Kisner & Colby Chapter 11 |
| Week 12: | Postural stability, balance, fall prevention;  
|         | Functional progression of athletic exercises, plyometrics, strength, flexibility | Kisner & Colby Chapter 7 |
| Week 13: | Student presentations | |
| Week 14: | The complex patient; Laboratory topics review | |
| Week 15: | Practical examination; Lecture topics review | |
| Week 16: | Final examination | |

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PT 620 Patient Interventions I
Midterm Examination

1. The following would be appropriate methods to strengthen a patient with grade 2+ to 3- deltoid and supraspinatus strength of the L shoulder.
   A. 10 RM sitting, using Velcro weights around wrists
   B. Reciprocal pulley, where R. hand helps the L arm abduct, then the person tries to lower the arm slowly.
   C. Contract/relax
   D. Closed chain push ups

2. Range of motion exercises can be used to increase strength:
   A. In all patients when done actively
   B. In patients with grade 3 muscle strength when done active assisted
   C. In patients with grade 2 when done actively with gravity eliminated
   D. When done passively for patients with a grade 1 muscle strength

3. Active range of motion can be used for all except:
   A. Increasing flexibility
   B. Aerobic conditioning
   C. Increasing flexibility in the joints above and below the one being treated with AROM
   D. Building coordination and skill

4. If a person has restricted ROM in the glenohumeral joint due to adhesive capsulitis, treatment with passive ROM would be used for all EXCEPT:
   a. Preparation for stretching
   b. Decreasing pain and increasing relaxation
   c. Improving circulation
   d. Examination
   e. Vigorous end-range stretching

5. A therapist decides to do passive range of motion targeting the knee joint with the patient prone. This is:
   a. A good idea, since the patient will be relaxed
   b. OK as long as the patient does not have COPD and is not pregnant
   c. Not a good idea, because knee joint mobility will be restricted by rectus femoris
   d. Not a good idea, unless the person has grade 3 hamstring strength

6. The following statements are true when using a Continuous Passive Motion machine EXCEPT:
   a. CPM can be applied immediately after surgery
   b. The total time might be 1 hour 3 times per day
   c. The total time might be continuous for 24 hours
   d. Once started for the day, should not be discontinued and re-started to allow for other treatments
   e. Will not build muscle strength

7. The disadvantages to doing shoulder and elbow PROM in seated include:
   a. The person has a harder time relaxing than supine, prone, or sidelying
   b. There are more barriers to moving the arm in all directions than in supine
   c. The proximal joints are not stabilized
   d. A and C
   e. A through C

8. The two joint muscles that might restrict knee joint extension include:
   a. Gastrocnemius if the foot is dorsiflexed
   b. Gastrocnemius if the foot is plantarflexed
   c. Soleus
   d. Hamstrings if the hip is positioned at 0 degrees extension
   e. Rectus femoris if the hip is extended

9. The primary resistance to stretching of muscle occurs in the following EXCEPT:
   a. The epimysium
   b. The myofibrilament
   c. The tendon
   d. The fascia

10. Response to gentle stretch includes:
    a. Collagen fibrils break
b. Myofilaments slide apart  
c. Heat is produced  
d. B and C  
e. A through C

11. Tissue change that allows lasting elongation of connective tissue:  
   a. Is called elastic change  
   b. Increases with longer duration of stretch  
   c. Happens when the wavy collagen fibers straighten out  
   d. Requires tissue failure

12. To maximize tissue length changes in stretching you might do all except the following:  
   a. Increase vigor of stretch  
   b. Do cyclic stretch  
   c. Ice the tissue prior to stretch  
   d. Place a constant stretch on the tissue. When the tissues relax, further lengthening is applied.

13. To increase length of connective tissue  
   a. Duration of stretch is not important, but frequency is  
   b. The total duration of a stretch should be at least 60 seconds for a 70 year-old  
   c. It is clear that one long stretch is better than several 10 second stretches  
   d. Never use ballistic stretch

14. A therapist slowly stretches her patient’s hamstrings during a straight leg raise for 15 sec while the patient remains completely relaxed. S/he then instructs the patient to maximally push against her in the direction of hip extension for a 5 sec isometric contraction. The therapist repeats this process several times. Which of the following is true during this type of stretching?  
   a. This type of stretching is a form of PNF referred to as Hold-Relax with Agonist Contraction  
   b. Isometric contractions from the hamstrings stimulates the hamstrings’ golgi tendon organs, decreasing hamstring activity during the subsequent stretch  
   c. Isometric contractions from the hamstrings stimulates the hamstrings’ muscle spindles, decreasing hamstring activity during the subsequent stretch  
   d. Both b and c  
   e. All of the above

15. When stretching a patient into hip extension and knee flexion, which of the following are true of autogenic inhibition techniques?  
   a. The rectus femoris is the agonist  
   b. The therapist will ask the patient to straighten her knee against unmoving resistance  
   c. The technique will target the antagonist to the motion  
   d. A and B  
   e. B and C

16. When stretching the hip into extension, if lasting increased ROM is the goal, which of the following are true:  
   a. The hip should be stretched far enough into extension that the back is pushed into extension  
   b. The patient should be stretched into the “necking” region of the stress strain curve  
   c. The patient should be stretched into the plastic range of the stress-strain curve  
   d. The patient should be stretched into the “toe” region of the stress strain curve  
   e. The hip should be stretched for 15 seconds for 2 reps, once per week

17. Ballistic stretching is most appropriate for  
   a. Adhesions and fibrotic tissue  
   b. Older adults who will be taking up golf  
   c. The ankle after 6 weeks of immobilization in a cast  
   d. Young athletic populations

18. Which of the following are true of newly acquired ROM  
   a. The new ROM may be maintained by functional activities that incorporate the new ROM  
   b. Continued PROM (at least once per week) exercises will help to build the coordination and motor control with the new ROM  
   c. Will probably be maintained if the person does not re-injure the area  
   d. A through C

19. When a therapist is trying to increase shoulder internal rotation ROM using agonist contract she:  
   a. Passively takes the joint to the end of the internal rotation ROM  
   b. Asks the patient to contract the subscapularis
c. Asks the patient to contract the infraspinatus
  d. A and B
  e. A and C

20. In the question just above, with her hand, the therapist will then
    a. Push the joint further into internal rotation
    b. Resist the patient from moving into internal rotation
    c. Follow the limb into internal rotation

21. The following is/are true in the example above
    a. The technique is an example of autogenic inhibition
    b. The technique is an example of reciprocal inhibition
    c. The technique takes advantage of the muscle spindle
    d. The technique takes advantage of the golgi tendon organ to inhibit the stretch muscle

22. Which of the following are advantages to warming up prior to exercise or cooling down after exercise?
    a. A warm-up increases blood flow and core temperature, and a cool-down helps remove metabolic waste products, such as lactate
    b. A warm-up may reduce the risk of musculoskeletal injury and enhance muscular performance
    c. In higher risk individuals, a warm-up and cool-down may decrease the occurrence of ischemic ST-segment depression
    d. A and B
    e. All of the above

23. Which of the following is a contraindication for resistance training?
    a. Patients with osteoporosis
    b. Patients with mild muscle soreness
    c. Inflammation and sharp, acute pain with muscle contraction
    d. A and C
    e. All of the above

24. A physical therapist prescribes a resistance training program for her patient that involves the patient performing 3 sets of 10 repetitions for 3 different exercises. Which of the following fitness parameters is best developed with this program?
    a. Muscular strength
    b. Cardiovascular endurance
    c. Muscular endurance

25. In strengthening muscles, Delorme’s 10 RM is similar to what percent of 1 RM?
    a. 10%
    b. 75%
    c. 80%
    d. 90%

26. To increase muscular endurance, the following are appropriate training regimens:
    a. Take 20% of 1 RM and repeat up to 50 times
    b. Take 30% of 1 RM and repeat 20 times
    c. Take 50% of 10 RM and repeat 30 times
    d. None of the above
    e. All of the above

27. When is it time to increase the vigor of a strengthening program
    a. When the patient can do 2 reps more than the training protocol calls for
    b. Not before the patient can do 5 reps more than the training protocol, and she looks like she could do her nails at the same time
    c. As soon as the patient stops substituting with stronger muscles
    d. If the patient is doing a 10 RM protocol, with 5#, you try to progress to 7#, and he is able to do 8 reps without substitution
    e. A and D

28. An appropriate rest period is:
    a. 10 minutes for strength training
    b. 30 seconds for endurance training
    c. 2 minutes for endurance training

29. After his total knee arthroplasty, Reginald can do 10 reps of short arc quad exercises with no weight as his 10 RM. What is an appropriate training regimen?
    a. 10 reps, 3 sets, every other day
    b. 10 reps, 1 set, every day
c. 10 reps, 3 sets, every day

30. The following are true for strengthening exercise within a session:
   a. Delorme starts with the supermax resistance, and drops ¼ of 10 RM for each following set
   b. Oxford starts with the 100% of 10 RM, in the first set, the goes to 50% of 10 RM for the last set
   c. Strengthen small muscle groups before large muscle groups
   d. Work on endurance first, then work on strength

31. A physical therapist prescribed a resistance training program for her patient that involves the patient performing 85% of his 1 RM (one repetition maximum). Approximately how many repetitions are commonly associated with 85% of 1 RM?
   a. 4
   b. 6
   c. 8
   d. 10

32. Which of the following is true regarding resistance training in youth?
   a. High intensity plyometric training is appropriate for all age groups for youth
   b. Training intensities between 80-90% 1 RM are appropriate for ages 11-13
   c. The barbell bench press is generally safer and easier to learn compared to the machine bench press
   d. Both a and b
   e. None of the above

33. Which of the following goals is/are important for plyometric training?
   a. Increase the time between the end of the eccentric phase and the beginning of the concentric phase
   b. Decrease the time between the end of the eccentric phase and the beginning of the concentric phase
   c. Increase the time of the concentric phase
   d. Increase the amortization phase

34. Which of the following occurs during the concentric phase of the stretch-shortening cycle?
   a. Muscle spindles are stimulated, evoking the stretch reflex
   b. Elastic energy is stored in the series and parallel elastic components of the musculotendinous unit
   c. Elastic energy is released from the series and parallel elastic components of the musculotendinous unit
   d. Both a and b
   e. Both b and c

35. In plyometrics, the following are true
   a. Employ a work:rest ratio of 1:5 or 1:10 for very high level work
   b. Work to rest ratio decreases as the height of the box increases in box jump
   c. For high intensity plyometrics, a man should be able to do a 0.5 x body weight squat, and woman should be able to do a 0.25 x body-weight squat.
   d. Plyometrics for children under 7 are recommended with 10 inch box jumps

36. Plyometrics have been found to:
   a. Increase endurance
   b. Improve leg mechanics in female athletes
   c. Improve power and jump height
   d. B and C
   e. A and C

37. In core strengthening begin with:
   a. Finding and maintaining neutral
   b. Identifying and activating core stabilizing muscles
   c. Dead bug exercises
   d. A and B
   e. A through C

38. Muscles emphasized in treatment to stabilize of the trunk include
   a. Rectus Abdominus
   b. Transverse Abdominus
   c. Internal Oblique
   d. B and C
   e. All of the above

39. Primary stabilizers of the cervical spine include
   a. Upper Trap, Sternocleidomastoid
   b. Rhomdoid, Serratus anterior
   c. Longus Colli, Multifidi
d. A through C

e. B and C

40. The “Stabilizer”
   a. Is an ancient torture device
   b. Causes the patient to slightly flex the cervical spine
   c. Is a woman’s undergarment
   d. Is used to recruit longus colli
   e. B and C

41. In supine, Maxine contracts internal oblique and transverse abdominus, causing a slight posterior pelvic tilt. When she attempts to lift her right leg off the table in a marching motion, her spine lordoses and rotates to the right. Her therapist then:
   a. Has her try the same exercise only marching in standing
   b. Has her re-set her muscles and raise an arm instead
   c. Has her re-set her muscles and gently drop her knee out to the side, and bring it back to the center
   d. A or C
   e. B or C

42. In the “drawing in maneuver”,
   a. The internal oblique is emphasized over the transverse abdominus
   b. The fingers curled in medial to the ASIS are pushed out by a bulging of the muscles underneath
   c. The patient tries to hollow the abdomen and bring the belly button toward the spine
   d. Inhales slightly to hollow the stomach

43. Side bridges with the “drawing—in maneuver” are particularly effective to recruit
   a. Transverse abdominus
   b. Quadratus Lumborum
   c. Rectus Abdominus
   d. A and B
   e. A through C

44. Curl-ups recruit
   a. Internal oblique
   b. Rectus Abdominus
   c. External oblique
   d. A and D
   e. A through C

45. Curl-ups on an unstable surface
   a. Increase recruitment of rectus abdominus by 2 times
   b. Increase recruitment of external obliques by 4 times
   c. Increase stabilization requirements compared to the same exercise done on the ground
   d. A and B
   e. A through C

46. Using the 15 point Borg scale (6-20), which of the following rates of perceived exertion is most appropriate for achieving an aerobic response?
   a. 10-14 for healthy individuals with a HRmax of 180
   b. Very very light (7) might be a beginning point for a mildly deconditioned/asymptomatic individual with HRmax of 180
   c. Very hard (17) for a healthy but deconditioned individual

47. Which of the following are NOT primary cardiovascular risk factors
   a. Obese
   b. Smoked cigarettes 20 years ago
   c. BP 145/95
   d. Sedentary
   e. Serum Cholesterol over 200

48. The submaximal aerobic tests we performed in class should
   a. Assume a steady state heart rate is achieved for each stage of the test
   b. Estimate VO2 max within 10-15% of testing done with open spirometry
   c. Assume a heart rate max is 220-age for any individual
   d. A and C
   e. A through C

49. An appropriate submax exercise test for a 65 year old sedentary woman with COPD would be
a. 6 minute bicycle test  
b. 8 minute treadmill test  
c. 6 minute walk test  
d. 6 minute step test  
e. All of the above

50. VO\text{2max} norms are  
   a. 100 mL/kg/min for 50-59 year old men in average condition  
   b. 30-45 mL/kg/min is reasonable for women 50-65 years old  
   c. Below 21 mL/kg/min is low for men or women of any age  
   d. B and C  
   e. All of the above

51. Specificity of training means that:  
   a. Training strength of the arms will improve aerobic capacity for the arms  
   b. Training by running will probably not improve VO\text{2max} for rowing  
   c. Testing VO\text{2max} using a treadmill walk test might not give an accurate measure for Lance Armstrong  
   d. B and C are correct  
   e. A through C are correct

52. HR\text{max} – HR\text{rest} x 60-70% + HR\text{rest} is a measure of:  
   a. Target training workload using heart rate reserve  
   b. Karvonen's formula  
   c. A way to calculate a target workload that is more accurate than using 220-age for HR\text{max}  
   d. B and C are correct  
   e. A through C are correct

53. You give Marge and Rex a beginning jogging program that looks like this: Walk 5 minutes, jog 3 minutes, walk 3 minutes, jog 3, walk 3 jog 3, walk 3 jog 3. This is an example of an aerobic program with:  
   a. Circuit training  
   b. Interval training with work relief (reduced work)  
   c. Circuit interval training with rest relief (no work)  
   d. Continuous training
1) During weeks 10-12 in your assigned lab you and your partner will give a 30 min rehabilitation presentation on one of the following postsurgical topics below (each of the below topics are covered in detail in your assigned textbook entitled “Rehabilitation for the postsurgical orthopedic patient”):

   a. Total Hip Arthroplasty  
   b. Total Knee Arthroplasty  
   c. ACL Reconstruction  
   d. Total Shoulder Arthroplasty  
   e. Rotator Cuff Repair  
   f. Ulnar Collateral Ligament Reconstruction  
   g. Posterior Lumbar Microscopic Discectomy  
   h. Anterior Cervical Discectomy and Fusion

2) The format for the 30 min presentation (NOT a powerpoint presentation) should be as follows:

   a. Surgical Indications and Considerations – 2-3 min
      i. A sample of subtopics you could cover include: pathophysiology and cause, common findings in patient’s history, common physical exam findings, and common diagnostic findings.

   b. Surgical Procedures – 2-3 min
      i. Briefly describe the different surgical procedures that are used and, if appropriate, advantages and disadvantages for each procedure.

   c. Therapy Guidelines for Rehabilitation – 20-25 min
      i. In this section you will discuss EACH rehabilitation phase (typically there are 3-6 rehab phases listed) and the components listed within each phase, including time duration of phase, phase progression criteria, anticipated impairments and functional limitations, interventions, goals, and rationale.

      ii. Spend most of your time DEMONSTRATING the therapeutic exercise interventions within each phase, and explain why they are appropriate for a given phase. Please make this interactive so your fellow classmates can try new exercises. Demonstrate some exercises within each phase, but choose at least 2-3 exercises within each phase that all lab participants can do together, and teach everyone how to perform these exercises (either exercises that everyone can do at the same time without a partner, or exercises that can be done with a partner’s assistance).