College of Life Sciences

Department of Exercise Sciences

04/2012

EXSC 625R - Strength Rehabilitation

Spring 2012

Section 001: 249K SFH on T W from 8:30 am - 10:10 am

Instructor Information

Name: Ulrike Mitchell **Office Phone**: 801-422-3344
Office Location: 268 SFH **Email**: Rike_mitchell@byu.edu
Office Hours: T,W 10:30 am to 12:00 pm

Course Information

Description

This course is designed to give an introduction into strength rehabilitation methods in theory and practice. It will briefly outline and discuss the history behind as well as advantages and disadvantages of isotonic, isometric and isokinetic exercises. We will discuss open and closed chain exercises, appropriateness of resistance exercises in young children and vibration as an adjunct treatment to strength training. We will then evaluate changes and adaptations necessary in strength rehabilitation when working with the elderly. Lastly, we will discuss strength rehabilitation in regards to the spine. The student is required to participate in a 6-week strengthening program (of his/her choice) to experience the up and downsides of such a program.

Learning Outcomes

Knowledge

Student will be able to name authors who played an important role in shaping strength rehabilitation and explain their concepts.
Student will be able to discuss intelligently the issues encountered when strengthening the elderly.
Student will know the anatomy related to spinal (instability) rehabilitation, problems associated with it and proper exercises for it.

Skill

Student will be able to manually muscle test for strength on a 0-5 scale.
Student will be able to use PNF to the upper and lower extremity.
Student will be able to analyze open chain exercises and change them to closed chain exercises.
Student will be able to perform and explain proper stabilization exercises.

Critical Thinking

Student will be able to critically assess older and current research studies.

Classroom Procedures

This class will incorporate lecture, discussions, presentations and group assignments. Lab assignments will support you in accomplishing the intended learning outcomes. You will need to work independently as well as in groups. I expect that you as a member of your group are prepared and able to contribute to the group in completing the assignments, helping others in your group with their learning and understanding of the concepts, and ultimately deepen your own learning.

Grading Policy

The grade will consist of

- 6 journal entries, detailing the student's experience from the 6-week workout program he/she chose to pursue (15%)
- Class presentations and participation in discussions of assigned readings (15%)
- Midterm (35%)
- Final project (35%)

Journal entries are due every Saturday of the semester; to be uploaded to LearningSuite. The 6th and final entry should incorporate a "final conclusion" section: what did you learn, which program would you recommend? Why?

Class Presentations will be cover literary work (i.e. published papers) and will be assigned to you the week before they are due.

Midterm will consist of mostly open-ended questions; will take place in the testing center.

Final Project

Due: Monday, Jun 11 at 8:30 am

Student presents a strength rehab program of his/her choice (preferably spinal). This rehab program video will have to be well thought through, demonstrate logical construction, taking into account tenets we learned in class. It should be considered the cornerstone project, the pinnacle of the class.

Point Breakdown and Grading Scale

Assignments	Percent of Grade		
Exam	35%	**Grade**	**Percent**
mid term	35%	A	94% to 100%
Presentations	50%	A-	90% to 93%
class presentations and discussion participation	15%	B+	87% to 89%
final project	35%	B	83% to 86%
Strength Training Journals	15%	B-	80% to 82%
strength training journal 1	2%	C+	77% to 79%
strength training journal 2	2%	C	73% to 76%
strength training journal 3	2%	C-	70% to 72%
strength training journal 4	2%	D+	67% to 69%
strength training journal 5	2%	D	63% to 66%
strength training journal 6 and final conclusion	5%	D-	60% to 62%

Schedule

Date	Subject
Tue 4/24	625R begins: Assignments and expectations: 1. Prepare texts/papers as class presentation – salient issues, take home messages (copies for students) 2. 6-week work out program, chose from different options in the LRC; keep a journal (pre and post testing) 3. Mid-term 4. Final project Mitchell: Intro to strength rehab: Strength- what is it and how does it work? Enoka: "Neural adaptations with chronic physical activity", Moritani and DeVries: "Neural factors versus hypertrophy in the time course of muscle strength gain" and Bloomer and Ives: "Varying neural and hypertrophic influences in a strength program". **Assignments for tomorrow**: Mayo: "Methods of muscular fitness assessment" and Traffas: "Science of strength testing"
We 4/25	**strength testing (pre)** student: Mayo: "Methods of muscular fitness assessment" student: Traffas: "Science of strength testing" **Assignments for next week** (Tue 5/1, history): DeLorme: "Restoration of muscle power by heavy-resistance exercises", Mueller: "Influence of training and of inactivity on muscle strength", Hislop and Perrine: "The isokinetic concept", Bunton: "The role of limb torque, muscle action and proprioception during closed kinetic chain rehabilitation of the lower extremity"
Tue 5/1	History, (students present) student: DeLorme: "Restoration of muscle power by heavy-resistance exercises", student: Mueller: "Influence of training and of inactivity on muscle strength", student: Hislop and Perrine: "The isokinetic concept", student: Bunton: "The role of limb torque, muscle action and proprioception during closed kinetic chain rehabilitation of the lower extremity" Report on work out program **Assignments for next week (no class tomorrow)**
We 5/8	Recap of last week: advantages/disadvantages of different exercise modes Isotonics, isokinetics and isometrics, PNF, closed/open chain and vibration **lab**;
Tue 5/9	Different strengthening philosophies (students present) student: Nader: "Concurrent strength and endurance training" student: DeLecluse: "Vibration and muscle strength" student: Faigenbaum: "Youth training" Discuss strength rehab issues **Assignments for Tuesday 5/15** (strength and ageing) Hairi: "Loss of muscle strength, mass (sarcopenia), and quality (specific force) and its relationship with functional limitation and physical disability: the Concord Health and Ageing in Men Project", Degens: "Disproportionate changes in skeletal muscle strength and size with resistance training and ageing", Manini: "Dynapenia and Aging: an update" Report on work out program

Tue 5/15	Strength and ageing (students present) _____: Hairi: "Loss of muscle strength, mass (sarcopenia), and quality (specific force) and its relationship with functional limitation and physical disability: the Concord Health and Ageing in Men Project" _____: Degens: "Disproportionate changes in skeletal muscle strength and size with resistance training and ageing", _____: Manini: "Dynapenia and Aging: an update"
We 5/16	**MIDTERM** **Assignments for Tuesday** 5/22 (core strength and spinal in/stability): Standaert: "evidence-informed management of chronic low back pain with lumbar stabilization exercises", Hides: "Multifidus muscle recovery is not automatic after resolution of acute, first-episode low back pain" AND "Long term effects of specific stabilizing exercises for first-episode low back pain", Panjabi: " spinal stability and intersegmental muscle forces: a biomechanical model", Hodges: "inefficient muscular stabilization of the lumbar spine associated with low back pain: a motor control evaluation of transversus abdominis" Report on workout program
Tue 5/22	Core strength and spinal in/stability (students present) _____: Standaert _____: Hides _____: Panjabi _____: Hodges
We 5/23	Spinal instability and rehab Report on workout program
Tue 5/29	class, second hour with Dr. Johnson (ultrasound)
We 5/30	**Core strength and spinal stability lab** Report on workout program
Tue 6/5	**Strength testing (post)**, work on project (videos)
We 6/6	Work on project (videos) Report on workout program
Mo 6/11	Meet to present projects, turn in journals **FINAL**

University Policy

Honor Code
In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and my own expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 801-422-2847 if you have questions about those standards.

Sexual Harassment
Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds. The act is intended to eliminate sex discrimination in education and pertains to admissions, academic and athletic programs, and university-sponsored activities. Title IX also prohibits sexual harassment of students by university employees, other students, and visitors to campus. If you encounter sexual harassment or gender-based discrimination, please talk to your professor; contact the Equal Employment Office at 801-422-5895 or 1-888-238-1062 (24-hours), or http://www.ethicspoint.com; or contact the Honor Code Office at 801-422-2847.

Student Disability
Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability which may impair your ability to complete this course successfully, please contact the University Accessibility Center (UAC) (801-422-2767). Reasonable academic accommodations are reviewed for all students who have qualified, documented disabilities. Services are coordinated with the student and instructor by the UAC. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures by contacting the Equal Employment Office at 801-422-5895, D-285 ASB.