



THE UNIVERSITY OF BRITISH COLUMBIA



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HES 212: Exercise Training

Laboratory Component Overview

2024

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Faculty of Health and Social Development
The University of British Columbia – Okanagan

We acknowledge that we gather on the traditional, ancestral, and unceded territory of the Syilx (Okanagan) peoples.



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Course & Lab Policies & Procedures

Lab Experience Outline (*How to use this Lab Manual*):

For each Practical Lab Experience, you will need to utilize this **Lab Manual**, the course textbook, along with other additional supplementary resources. In order to maximize your learning of the topics and lessons in these practical learning experiences, we suggest the following for this course:

1. **Plan** for time of focused reading and understanding to review the pre-lab material, instructions and any other supplementary information you may need to feel confident about participating in the laboratory experience.
 - *Note: this may require multiple readings of content, self-quizzing, practicing, researching or creating your own notes. A simple 'skim' of the material will not likely adequately prepare you for optimal learning or safe practice during the lab-based time.*
- ii. Refer to the Lab Manual for the general procedures and expectations for each lab, and where indicated, use the textbook or other **resources** to outline the theory, methodology or other information needed. The referenced material is important for learning and may be evaluated in course assessments. Make your own notes / resources in preparation for lab; by preparing well, you will avoid having to search through the resources extensively during lab time.
- iii. Make the most of the lab time available. Learning in a practical environment is best achieved when learners are actively involved in the process and participate in the procedures. Use your laboratory time effectively, including the learning support of your peers and your laboratory instructor. Your **participation** in lab in the various roles of the experiments or practices is vital and furthermore, may be evaluated as a part of course contributions.
- iv. Where possible, seek out opportunities to test and practice your lab knowledge and/or safely **practice** lab skills; there is limited time available to practice the techniques and methodology taught during course time, but much of the knowledge and many of the skills may be practiced and acquire feedback outside of class time. Please note, however, that any complex exercise training should only be conducted under the supervision of a qualified exercise professional in a safe environment, with appropriately screened individuals (as covered in this class!)



Laboratory Policies

General School of Health & Exercise Sciences Lab Policies

- Attendance and active participation in laboratories are strongly encouraged (and mandatory in some courses). Please check with individual course instructors on course-specific processes and penalties for missed labs. If you experience an extenuating circumstance, in a course where attendance is graded, you may need to submit the HES Self-Declaration Form.
- Attending a different lab section during a particular week, is only permitted under exceptional circumstances and needs to be discussed and arranged with your course instructor:
 - E.g., an extenuating circumstance or unanticipated commitment (e.g., student athletes having a one-time absence for playoffs).
- Act in a manner that facilitates a positive learning environment; students who are disruptive to this will be asked to leave and will be considered absent from the lab.

Course-Specific Lab Policies – HES 212 (Exercise Training)

1. Personal **belongings**, (e.g., bags, coats, etc) should be placed in designated areas.
2. **Teaching Assistants (TAs) are in charge**. You must carefully follow their instructions. **Do not enter a laboratory area unless it is attended by a staff/supervisor** (e.g. TA, instructor, lab coordinator, etc).
3. **Wash hands** regularly, such as when exiting or entering the lab, after spill clean-up or changing tasks.
4. **Dress appropriately for the Practical Laboratory Session**. Laboratory **clothing** should be appropriate to the session and proper footwear (close-toed shoes) should be worn. Restrain dangling clothing, hair or jewellery.
5. **Adhere to all Health Measures** (e.g., stay home if you are sick) and relevant **Pre-Exercise or Pre-Laboratory criteria** (e.g. abstaining from certain foods or activities prior to your laboratory session).
6. **Ensure you are comfortable with the laboratory activities and instructions prior to coming to lab** (e.g., including emergency procedures, protocols, equipment use).
7. **Ensure that you only perform the activities that you have been trained in and conduct them in the manner you have been trained to safely perform them.** (during both laboratory sessions and practice sessions)
8. **Be Prepared for Participating in the Laboratory Activity.**
9. **Conduct yourself Professionally at all times.**
10. **Ensure participant and your own Safety at all times.** Never leave an individual who has just completed an exercise session alone!
11. **Participants must complete prescreening & informed consent for the activities being conducted.**
12. **Avoid distractions during laboratory time.** This includes use of computers for unrelated activities.
13. **Treat others, and yourself, with dignity and respect at all times.**
14. **Be conscientious with equipment and lab space.** Maintain a clean environment, be careful with use of equipment, clean up any spills immediately, plan for the possibility of emergencies and an 'exit route' at all times.
15. **Inform the TA (or supervisor of lab) of any issues as soon as possible.**
16. **The Emergency Phone is located near the door of the laboratory.**
17. **The First Aid Kit and AED are located in the central lab equipment room.**



HES 212 Course Learning Outcomes and Laboratory Descriptions

Academic Calendar Entry

The theory, practice and analysis of safe and effective exercise training, including the design, implementation and analysis of exercise sessions, training and rehabilitation programs and ongoing monitoring strategies. [3-2-0] 3 Credits. *Prerequisites: All of HES 101, HES 105, HES 111.*

Class Schedule (all times in Pacific Daylight/Standard Time; local time Kelowna, BC):

- **LECTURE [FIP 204]:** Tuesdays & Thursdays: 2:00pm – 3:30pm
- **LAB [UCH 109]**
 - Lab 01: Fridays: 8:00am - 10:00am
 - Lab 02: Fridays: 10:00am - 12:00pm
 - Lab 03: Fridays: 12:00pm - 2:00am
 - Lab 04: Fridays: 2:00pm - 4:00pm
 - Lab 07: Thursdays: 11:30am - 1:30am
 - Lab 08: Thursdays: 5:00pm - 7:00pm
 - Lab 09: Tuesdays: 5:00pm - 7:00pm
 - Lab 10: Wednesdays: 4:30pm - 6:30pm
 - Lab 11: Mondays: 5:00pm - 7:00pm

Required Readings and Videos

- Canadian Society for Exercise Physiology – Physical Activity Training for Health (CSEP-PATH). (2nd & 3rd Editions accepted). Canadian Society for Exercise Physiology.
- Other Required Resources will be provided through the term.

Laboratory-Specific Learning Outcomes:

1. Apply knowledge of the physiological principles underlying exercise training sessions, analyzing the adjustments and adaptations linked to different training variables (FITT-VP) and modes of exercise. Modify elements within a training session to influence physiological responses.
2. Plan and execute exercise training sessions effectively, ensuring safety and efficacy through exercise selection and modification. Evaluate how these choices positively impact exercise, functional capacity, health, and performance outcomes. Adapt exercises and programming based on individual client needs and conditions.
3. Execute safe and proficient leadership in both individual and group exercise sessions encompassing various exercise modes (cardiorespiratory fitness, muscular strength and endurance, flexibility, coordination, and agility). Demonstrate leadership skills in guiding participants through diverse exercise routines.
4. Demonstrate precise and comprehensive monitoring skills during clinical and exercise sessions, utilizing equipment and technology proficiently. Display competence in monitoring participants' responses and making necessary adjustments during exercise sessions to accommodate individual client requirements.



Guidelines for Effective Practice of Exercise Training Skills

1. **Consistent Practice:**
 - Allocate regular time slots each week to practice exercise testing skills. This is just as much of the 'homework' of this course as studying slides.
2. **Structured Plan:**
 - Break down technical skills into manageable parts. Focus on mastering the component parts as well as integration of it all together.
3. **Utilize Resources:**
 - Refer to textbooks, online materials, and academic sources to reinforce learning and understand proper techniques.
4. **Peer Practice:**
 - Collaborate with peers or study groups to practice. Observe and provide feedback to each other for mutual improvement.
5. **Simulated Scenarios:**
 - Create simulated scenarios resembling real-life situations. Practice communication and technical skills with mock clients or situations.
6. **Record and Review:**
 - Record practice sessions to self-assess. Review recordings to identify areas for improvement.
7. **Seek Feedback:**
 - Request guidance and constructive feedback from peers, instructors, TAs, or professionals in the field to refine skills.
8. **Reflective Practice:**
 - Journal experiences after practice sessions. Note successes, areas for improvement, and strategies for enhancement.
9. **Stay Updated:**
 - Stay abreast of new advancements in exercise testing. Engage in additional readings, workshops, or webinars related to the field.
10. **Stay Motivated:**
 - Recognize the relevance of practical skills for future careers. Stay motivated and committed to consistent practice.
11. **Time Management:**
 - Manage time effectively by balancing coursework with dedicated practice sessions.
12. **Integrate Theory and Practice:**
 - Connect theoretical knowledge with practical applications to deepen understanding and enhance skills.

Remember: Effective practice outside of class significantly contributes to skill mastery in exercise testing. Stay focused, seek support, and remain committed to your practice routine.



Anticipated Lab Schedule

(subject to change)

Lesson	DAY	DATE	TOPIC	Assessment	Labs		Lab Topics
1	TUES	09-Jan-24	Leadership & Principles of Training		Fri	M-Th	
2	THURS	11-Jan-24	Exercise Physiology Foundations- Responses to Exercise Training		1		Practice Stations & Training Approach
3	TUES	16-Jan-24	Exercise Physiology Foundations- Adaptations to Exercise Training			1	
4	THURS	18-Jan-24	Training for Health: Aerobic Training		2		Assessment, Monitoring, Leadership
5	TUES	23-Jan-24	Training for Health: Aerobic Training			2	
6	THURS	25-Jan-24	Training for Health: Balance, Stability & Flexibility Training	Quiz 1	3		Aerobic Training Session
7	TUES	30-Jan-24	Training for Health: Resistance Training			3	Balance, Stability, Flexibility Training + Movements Session
8	THURS	01-Feb-24	Training for Health: Resistance Training		4		
9	TUES	06-Feb-24	Training for Performance: Part 1			4	Resistance Training Session 1
10	THURS	08-Feb-24	Training for Performance: Part 2		5		
11	TUES	13-Feb-24	Review			5	Resistance Training Session 2
12	THURS	15-Feb-24	TEST 1	Test 1	6		
	TUES	20-Feb-24	READING BREAK				
	THURS	22-Feb-24					
13	TUES	27-Feb-24	Practical Exercise Training Topics			6	Resistance Training Session 2
14	THURS	29-Feb-24	Practical Exercise Training Topics	Quiz 2	7		Technical, Group Sessions
15	TUES	05-Mar-24	Practical Exercise Training Topics			7	
16	THURS	07-Mar-24	Practical Exercise Training Topics	Practical Midterm	8		Practical Midterm
17	TUES	12-Mar-24	Training for Children & Youth			8	
18	THURS	14-Mar-24	Training for Pregnancy			9	
19	TUES	19-Mar-24	Training for Overweight & Obese			9	Short Session Practice, Adaptations & Emergency Practice
20	THURS	21-Mar-24	Training for Disability	Quiz 3	10		
21	TUES	26-Mar-24	Training for Older Adults			10	
22	THURS	28-Mar-24	Practical Exercise Training Topics				
23	TUES	02-Apr-24	Review			11	TBD: Skills Practice
24	THURS	04-Apr-24	TEST 2	Test 2	11		
25	TUES	09-Apr-24	EXAM PREP				
26	THURS	11-Apr-24	EXAM PREP				Practical Final
	EXAM PERIOD			April 15-26			

Lab Schedule by Registered Lab Date

	LAB	FRIDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
1	Practice Stations & Training Approach	12-Jan-24	15-Jan-24	16-Jan-24	17-Jan-24	18-Jan-24
2	Assessment, Monitoring, Leadership	19-Jan-24	22-Jan-24	23-Jan-24	24-Jan-24	25-Jan-24
3	Aerobic Training Session	26-Jan-24	29-Jan-24	30-Jan-24	31-Jan-24	01-Feb-24
4	Balance, Stability, Flexibility Training Session	02-Feb-24	05-Feb-24	06-Feb-24	07-Feb-24	08-Feb-24
5	Resistance Training Session 1	09-Feb-24	12-Feb-24	13-Feb-24	14-Feb-24	15-Feb-24
6	Resistance Training Session 2	16-Feb-24	READING BREAK			
		RDG BREAK	26-Feb-24	27-Feb-24	28-Feb-24	29-Feb-24
7	Resistance Training Session 3	01-Mar-24	04-Mar-24	05-Mar-24	06-Mar-24	07-Mar-24
8	Practical Midterm	08-Mar-24	11-Mar-24	12-Mar-24	13-Mar-24	14-Mar-24
9	Long Session, Group Training Implementation	15-Mar-24	18-Mar-24	19-Mar-24	20-Mar-24	21-Mar-24
10	Short Session Practice, Adaptations & Emergency Practice	22-Mar-24	25-Mar-24	26-Mar-24	27-Mar-24	28-Mar-24
11	EXAM PRACTICE or Practical Exams	HOLIDAY		02-Apr-24	03-Apr-24	04-Apr-24
	PRACTICAL EXAMS	05-Apr-24	08-Apr-24	09-Apr-24	10-Apr-24	11-Apr-24
		12-Apr-24	15-Apr-24			



Additional Reference Material

Testing Muscular Strength (1RM)

- https://www.nscs.com/contentassets/116c55d64e1343d2b264e05aaf158a91/basics_of_strength_and_conditioning_manual.pdf

Other Strength Training Technique Resources

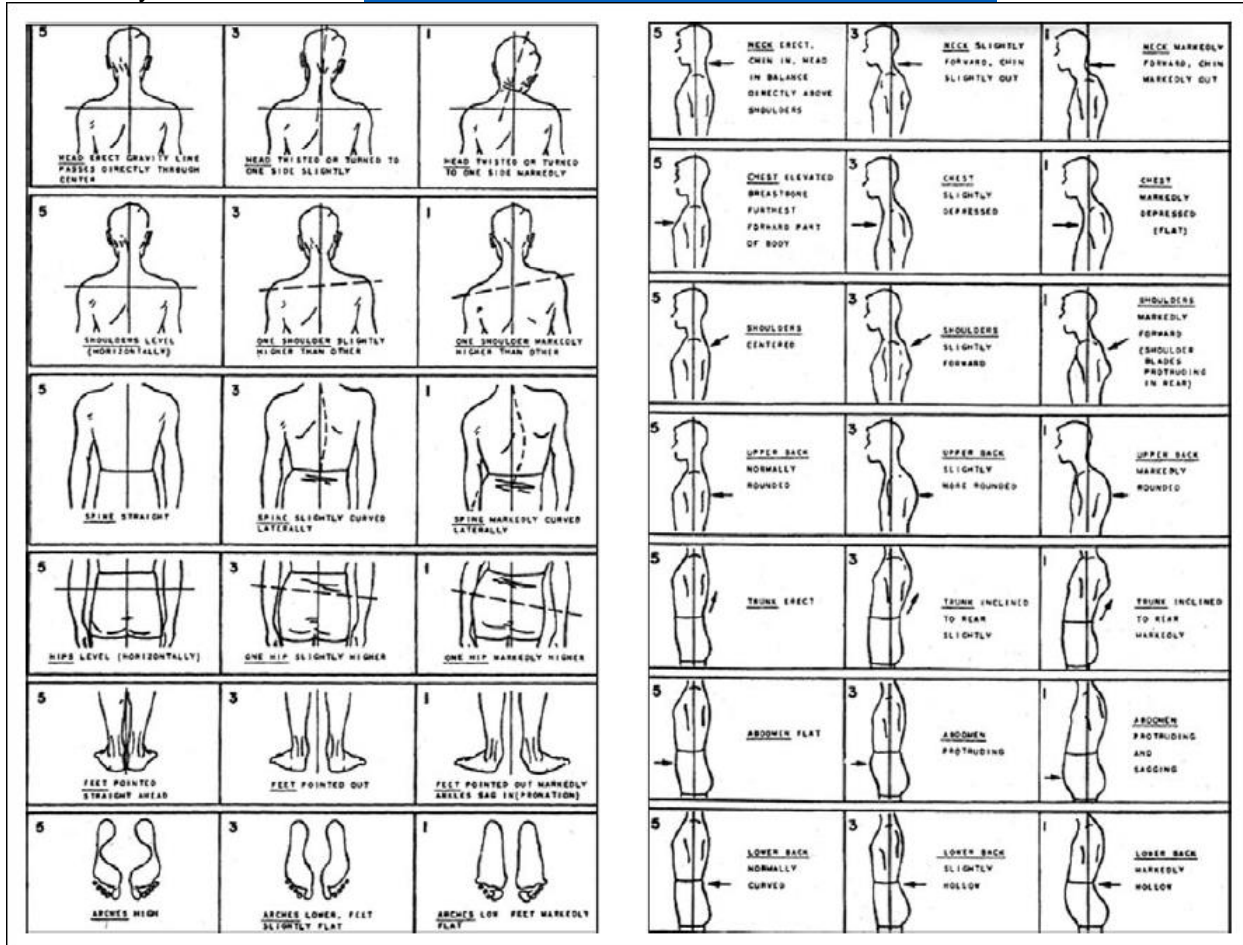
- “How to Squat” <https://www.fitnesseducation.edu.au/blog/education/how-to-squat-proper-barbell-squat-technique/>
 - Additional Resource: Video by “Starting Strength” <https://www.youtube.com/watch?v=nhoikoUEI8U>
- “How to improve your bench press technique” <https://humankinetics.me/2017/09/15/improve-bench-press-technique/>
 - Additional Resource: Video by “Starting Strength” <https://www.youtube.com/watch?v=rxD321I2svE>
 - Mind Pump TV: <https://youtu.be/-MAABwVKxok>

1RM Testing Protocol
<ol style="list-style-type: none">1. Instruct the athlete to warm up with a light resistance that easily allows 5 to 10 repetitions.2. Provide a 1-minute rest period.3. Estimate a warm-up load that will allow the athlete to complete three to five repetitions by adding<ul style="list-style-type: none">• 10 to 20 pounds (4-9 kg) or 5% to 10% for upper body exercise or• 30 to 40 pounds (14-18 kg) or 10% to 20% for lower body exercise.4. Provide a 2-minute rest period.5. Estimate a conservative, near-maximal load that will allow the athlete to complete two or three repetitions by adding<ul style="list-style-type: none">• 10 to 20 pounds (4-9 kg) or 5% to 10% for upper body exercise or• 30 to 40 pounds (14-18 kg) or 10% to 20% for lower body exercise.6. Provide a 2- to 4-minute rest period.7. Make a load increase:<ul style="list-style-type: none">• 10 to 20 pounds (4-9 kg) or 5% to 10% for upper body exercise or• 30 to 40 pounds (14-18 kg) or 10% to 20% for lower body exercise8. Instruct the athlete to attempt a 1RM.9. If the athlete was successful, provide a 2- to 4-minute rest period and go back to step 7. If the athlete failed, provide a 2- to 4-minute rest period; then decrease the load by subtracting<ul style="list-style-type: none">• 5 to 10 pounds (2-4 kg) or 2.5% to 5% for upper body exercise or• 15 to 20 pounds (7-9 kg) or 5% to 10% for lower body exercise.AND then go back to step 8. <p>Continue increasing or decreasing the load until the athlete can complete one repetition with proper exercise technique. Ideally, the athlete's 1RM will be measured within three to five testing sets.</p>

From Essentials of Strength & Conditioning. (2016) National Strength & Conditioning Association. 4th Ed.

Posture Assessment:

- McRoberts, L. B., Cloud, R. M., & Black, C. M. (2013). Evaluation of the New York Posture Rating Chart for Assessing Changes in Postural Alignment in a Garment Study. *Clothing and Textiles Research Journal*, 31(2), 81–96. <https://doi.org/10.1177/0887302X13480558> (on LOCR)
- Physiotutors Video: <https://www.youtube.com/watch?v=Zp5iC3loq7U>



Basic Movement Patterns:

Fundamental exercise movement patterns are essentially classifications used in exercises. These classifications have become foundational due to their popularity in exercise selection. When an exercise professional or strength and conditioning coach identifies which fundamental movement patterns are crucial for an athlete or client, they create a set of exercises based on these patterns (known as exercise classifications). <https://www.scienceforsport.com/basic-movement-patterns/>

Coaching Cues

While coaching is commonly considered an "art," recent scientific findings suggest that certain coaching methods might outperform others, emphasizing the significance of evidence-based coaching. This article examines the impact of coaching cues—whether external or internal—on athletes' performance, including their skill retention. <https://www.scienceforsport.com/coaching-cues/>



General Resistance Training Log

Client Name:							Warm-Up Details:					
Date of Training			Baseline Status:									
Focus of Training Phase							Cool-Down Details:					
							Dates:					
Exercise	<i>Notes</i>	Load	Tempo	Sets	Reps							
Workout Notes:												