University of Florida
Department of Applied Physiology and Kinesiology
APK 6176 Strength and Conditioning
Spring 2019
Section 10702 Lecture: M 1:55-4:55, Weil 0279

Instructor: Dr. Blain Harrison
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Office hours: MWF 12:00 – 2:00PM or by appointment

Course Syllabus

Course Description

Addresses the principles of designing training programs of varying duration aimed at improving muscular strength, power, speed, agility, endurance, balance, stability, and hypertrophy. Application to typical athletic populations, tactical athletic populations, and special athletic populations will be emphasized.

Course Objectives

At the conclusion of the course students will be able to:

- Describe the basic physiology of the skeletal, neuromuscular, and cardiovascular systems as they pertain to an athlete engaged in a strength and conditioning program
- Identify the biomechanical factors that influence resistance training performance
- Analyze a sport with regards to the primary energy system involved in its execution
- Explain how anabolic and catabolic hormones influence the adaptation to a strength and conditioning program.
- Compare the expected physiological adaptations of anaerobic and aerobic training programs.
- Recommend appropriate assessments of athletic performance and interpret test results.
- Prescribe exercise training sessions with the intention of improving athletic performance in the areas of strength, power, speed, agility, aerobic capacity, hypertrophy, and flexibility
- Create a periodized annual strength and conditioning program incorporating all of the variables described above.
- Manipulate a strength and conditioning program to meet the needs of a rehabilitating athlete.
- Sit for the NSCA CSCS exam in your senior year, or upon graduation, if desired.

Required Textbook
Harrison, B. Strength and Conditioning. TopHat Monocle

Recommended Textbooks
Haff, G. and T. Triplett. Essentials of Strength Training and Conditioning **– 4th Edition**. Human Kinetics, 2016.

Additional Readings (to be provided on Canvas)

1. Thomas, C, Comfort, P, Jones, P, and T. Dos'Santos. *Strength and Conditoning for Netball: A Needs Analysis and Training Recommendations*. Strength and Conditioning Journal. August 2017.
2. Kivlan, B and R.L. Martin. *Functional Performance Testing of the Hip in Athletes: A Systematic Review For Reliability and Validity*. Int. J. of Spor. Phys. Ther. Volume 7(4); August 2012.
3. Behm, D.G., Blazevich, A.J., Kay, A.D., and M. McHugh. *Acute effects of muscle stretching on physical performance, range of motion, and injury incidence in healty active individuals: a systematic review*. Appl. Physiol. Nutr. Metab. 41: 1-11. 2016
4. Soriano, M.A., Jimenez-Reyes, P, Rhea, M., and P.J. Marin. *The Optimal Load for Maximal Power Production During Lower-Body Resistance Exercises: A Meta-Analysis*. Sports Med 45:1191-1205. 2015.
5. Sloth, M., Sloth D., Overgaard, K., and U. Dalgas. *Effects of sprint interval training on VO2max and aerobic exercise performance: A systematic review and meta-analysis*. Scand J Med Sci Sports 2013: 23: e341-e352.
6. Seitz, L.B., Reyes, A., Tran, T.T., Saez de Villarreal, E, and G. Haff. *Increases in Lower-Body Strength Transfer Positively to Sprint Performance: A Systematic Review with Meta Analysis*. Sports Med 44:1693-1702. 2014.
7. Williams, T.D., D.V. Tolusso, M.V. Fedewa, and M.R. Esco. *Comparison of Periodized and Non-Periodized Resistance Training on Maximal Strength: A Meta Analysis*. Sports Med 47:2083-2100 (2017)
8. V.B. Issurin. *Benefits and Limitations of Block Periodization Training Approaches to Athletes Preparation: A Review*. Sports Med 46:329-338 (2016)
9. Howe, L.P., P.Read, and M. Waldron. *Muscle Hypertrophy: A Narrative Review on Training Principles for Increasing Muscle Mass.* Str. Cond. J. 39(5) 72-81.
10. Kraemer, W.J., N.A. Ratamess, S.D. Flanagan, J.P. Shurley, J.S. Todd, and T.C. Todd. *Understanding the Science of Resistance Training: An Evolutionary Perspective*. Sports Med 47:2415-2435 (2017).
11. Denadai, B.S., R. Alves de Aguiar, L. Coelho Rabello de Lima, C. C. Greco, and F. Caputo. *Explosive Training and Heavy Weight Training are Effective for Improving Running Economy in Endurance Athletes: A Systematic Review and Meta-Analysis*. Sports Med 47:545-554 (2017).
12. Young, W.B., B. Dawson, and G.J. Henry. *Agility and Change of Direction Speed are Independent Skills: Implications for Training for Agility in Invasion Sports*. Int. J. Sport Sci & Coach 10(1) 159-171.
13. Wirth, K., H. Hartmann, C. Mickel, E. Szilvas, M. Keiner, and A. Sander. *Core Stability in Athletes: A Critical Analysis of Current Guidelines*. Sports Med 47:401-414 (2017).

(Additional Readings from those listed may be added at the discretion of the instructor)

Grading

Assessment	Points	Weight
Exam 1	30 points	10%
Exam 2	30 points	10%
Exam 3	30 points	10%
Exam 4	30 points	10%
Module Quizzes	150 points	10%
Program Design Project	50 points	20%
Training Modality Presentation	50 points	10%
TopHat Questions/Participation		10%
Lab Practical Exam	20 points	10%

93.0% - 100% = A
90.0% - 92.99% = A-
87.0% - 89.99% = B+
80.0% - 86.99% = B
77.0% - 79.99% = C+
70.0% - 76.99% = C
67.0% - 69.99% = D+
60.0% - 66.99% = D
<60 = E

Information on current UF grading policies for assigning grade points:

https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

Exams

There are four semester exams. The semester exams will be not be comprehensive. Lecture Exams will be administered through Canvas. All exams will be taken online outside of class and will be open book. Exams will consist of essay questions. Students may NOT work together on exams. Exams will be available for 24 hours but must be completed in one sitting and will be time limited to **60min**. Students with accommodation letters from the DRC will be given additional time per their letter. All exams will be taken on **Canvas ONLY**. It is the student's responsibility to ensure that their computers will connect successfully to wifi prior to all exams. **HARD COPIES OF QUIZZES AND EXAMS WILL NOT BE AVAILABLE**.

Please see your instructor at least 72 hours prior to your exam if circumstances arise that will prevent you from taking the exam. If you have a schedule conflict for an exam you must take the exam early and not after the scheduled exam. Missed Exams will be scored a zero with no make-up exams permitted.

Module Quizzes

Weekly module quizzes will be administered via Canvas. These quizzes will consist of objective questions (i.e. multiple choice, matching, ordering, etc.). Weekly module quizzes will be available for 24 hours Friday of the week the module is covered in class. Students will complete the quizzes outside of class. The LockDown Browser is required for taking each quiz and there will be a **15min** time limit for each quiz. Students with accommodation letters from the DRC will be given additional time per their letter.

Weekly Assignments

Each week a unique collection of daily assignments will be made available on Canvas or TopHat. Participation assignments may include quizlet assignments, lab questions, research article questions, research article synopses, and program design questions. **Please note that there is an assignment due every weekday throughout the semester**. A particular day's assignment will be available for 24 hours so that students spend approximately 20 minutes each weekday engaged with the course material. Similar assignments will be due on the same day each week according to the following outline:

Monday – TopHat Chapter Module Questions – Due by 1:55PM each Monday (Participation Assignment)

Peer Review of Previous Week's Training Program Update – Due by 11:59PM each Monday (Participation Assignment)

Tuesday – Quizlet Activity – Due by 11:59PM each Tuesday (Participation Assignment)

Weekly Lab Questions – Due by 11:59PM each Tuesday (Participation Assignment

Wednesday – Weekly Research Article Questions – Due by 11:59PM each Wednesday (Participation Assignment)

Thursday – Weekly Research Article Synopsis Assignment – Due by 11:59PM each Thursday (Participation Assignment)

Friday – Weekly Module Quiz – Due by 11:59PM each Friday (Graded Assignment)

Weekly Training Program Update Submission – Participation Assignment

Applied Program Design Project

Students will administer a 12-week periodized performance-training program to another individual between weeks 3-15 of the semester. Weekly updates of training progress are required to be submitted to Canvas for peer review. Students will conduct a needs analysis, create SMART goals, coach the individual on proper technique while administering each training session within the program, and re-test at the end of the program to identify if program goals were met. Students will create a presentation discussing the components and results of the program and upload it to Canvas for evaluation. The presentations are due Sunday April 28, 2019.

Applied Program Design Project Rubric

	7- 10 points	3 - 6 points	0- 2 points
Part 1: Needs Analysis	Thorough and complete needs analysis including assessments and results	Partially complete needs analysis	Incomplete or missing needs analysis lacking sufficient details, assessments, and results
Part 2: Periodization Plan	Thorough and complete 12-month annual plan including full description of macro-, meso-, and microcycle elements	Partially complete annual plan	Incomplete or missing annual plan lacking sufficient details of macro-, meso-, and microcycle elements
Part 3: Representative Training Sessions	Thorough and complete description of representative training sessions as directed in instructions	Partially complete representative training sessions	Incomplete or missing representative training sessions lacking several components as directed in instructions

Part 4: Results of Program	Thorough and complete description of the results of the training program	Partially complete results of the training program	Incomplete or missing results of the training program
Part 5: Lessons Learned during Program	Thorough and complete explanation of the positive and negative attributes of the program and opportunities for improvement	Partially complete explanation of the positive and negative attributes of the program	Incomplete or missing explanation of the positive and negative attributes of the program

Training Modality Presentation

Students will select a strength and conditioning training modality from a list proved by the instructor and upload a 10-minute presentation to Canvas describing the history, use of, supporting evidence, program design considerations, and certification opportunities for the modality.

Training Modality Presentation

	6-10 points	1-5 points	0 points
Part 1: Modality Description and Development	Thorough and complete description of the modality and its use in strength and conditioning	Partial description of the modality and/or its development	No description of modality nor discussion of its development.
Part 2: Common Techniques and Errors	Details on 5 or more common exercises utilizing the modality	Details on 1-5 common exercises utilizing the modality	No details of any exercises using the modality
Part 3: Common Prescription Characteristics	Thorough and complete description of how intensity, volume, and frequency are commonly prescribed	Partial description of how intensity, volume, and frequency are commonly prescribed	No description of how intensity, volume, nor frequency are commonly prescribed
Part 4: Evidence Supporting Use	Description of 3 or more original research articles involving use of the modality in an athletic population	Description of 1-2 research articles involving the use of the modality in an athletic population	No description of any research articles involving the use of the modality in an athletic population
Part 5: Certification Resources	Complete listing of organizations offering certifications with modality	Partial listing of organizations offering certifications with modality	No organizations offering certifications in the modality provided

Lab Practical Exam

Students will be assessed on their ability to safely lead another individual through exercises representative of a strength and conditioning program. Proper technique and coaching recommendations will be provided in weekly laboratory experiences. The practical exam will consist of objective questions involving viewing videos of exercise demonstrations and answering questions regarding technique and coaching recommendations.

Top Hat

We will be using the Top Hat (www.tophat.com) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message. Questions administered in class and within the TopHat textbook modules count towards your final grade. Each lecture will include approximately 5 questions worth 1 point each (as participation points). In-class and textbook TopHat questions will contribute to the participation component of the course that constitutes 15% of the final grade.

You can visit the Top Hat Overview (https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide) within the Top Hat Success Center which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.

An email invitation will be sent to you by email, but if don't receive this email, you can register by simply visiting our course website:

https://app.tophat.com/e/372804

Note: Course Join Code is 372804

Top Hat will require a paid subscription, and a full breakdown of all subscription options available can be found here: www.tophat.com/pricing.

Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email (support@tophat.com), the in app support button, or by calling 1-888-663-5491.

Grading

Notification of final grades will be made by the Registrar or you may check your grade by using ISIS. Final grades will not be posted.
You must earn your grade! Grades will not be rounded! The extra credit opportunities are designed to help any individual with a borderline grade by demonstrating their commitment to the course.

Class Attendance Policy

Students are expected to attend all classes and to have completed assigned reading prior to class as scheduled by the instructor. Questions related to assigned readings will be available on Canvas. The following link outlines the UF Attendance Policy found in the Graduate Catalog
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Cell Phone Policy

Students in this course are expected to behave professionally, politely, and considerately. Cell phone use with regard to phone conversations, text messaging, and social media use during lectures, labs, and exams is banned in this class. Smartphone or tablet devices may be used to participate in discussions and answer questions administered through TopHat.

Academic Honesty

Cheating will not be tolerated in this course. All students are required to abide by the Academic Honesty Guidelines and Honor Code, which have been accepted by the University. Cheating is defined as the improper taking or tendering of any information or material, which shall be used to determine academic credit. Violations of the Honor Code will be handled according to the guidelines set by Student Judicial Affairs. UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with me.

Accommodations for students with disabilities
Students with disabilities requesting accommodations should first register with the DisabilityResource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester

Online course evaluation process
Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc/Default.aspx, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies
The University of Florida has enacted a policy of allowing NO food or drink of any kind in any campus classroom. This policy will be enforced during the meeting times of this course.

U Matter, We Care:
If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

APK6176 - Class Schedule

***Indicates a homework assignment is due at the end of the week. Consult Canvas for details**

Week	Dates	Topic	Module
1	(1/7 – 1/11)	*Designing a Needs Analysis* Introduction, Review of Syllabus Assessment Lab 1	1.1
2	(1/14-1/18)*	*Designing an Annual Training Plan* Assessment Lab 2	1.2
3	(1/21-1/25)*	*Designing an Integrated Training Plan* Assessment Lab 3 **NO CLASS MONDAY – MLK DAY**	1.2
4	(1/28-2/1)	*Designing a Corrective Exercise Program Design* Corrective Exercise Techniques Lab	1.3
5	(2/4-2/8)*	*Designing a Movement Preparation/Warm Up* Dynamic Warm Up Lab **Exam 1 – Thursday 2/7 (Module 1)**	2.1
6	(2/11-2/15)*	*Designing a Flexibility Program* PNF Stretching Lab	2.2
7	(2/18-2/22)*	*Designing a Core Training Program* Core Stability, Strength, Power Lab (online)	2.3
8	(2/25-3/1)	*Designing a Muscular Hypertrophy Program* Fundamental Resistance Exercise Lab	2.4
9	(3/4-3/8)	**SPRING BREAK**	
10	(3/11-3/15)*	*Designing a Maximal Strength Program* Olympic Weightlifting Lab **Exam 2 – Thursday 3/14 (Module 2)**	3.1
11	(3/18-3/22)*	*Designing a Power Training Program* Plyometric Drills Lab	3.2
12	(3/25-3/29)	*Designing a Maximal Linear Speed Program* Speed Drills Lab	3.3
13	(4/1-4/5)*	*Designing a SAQ Program* SAQ Drills Lab	3.4
14	(4/8-4/12)	*Designing a Conditioning Program* Conditioning Lab (online) **Exam 3 – Thursday 4/11 (Module 3)**	4.1
15	(4/15-4/19)*	*Designing Sports Nutrition Recommendations* **Lab Practical Exam (4/19)**	4.2, 4.3

16	(4/22-4/24)	*Designing a Periodized Nutrition Program* **Exam 4 – Wednesday 4/24 (Module 4)**	4.4

Applied Program Design Project and Presentation Due
Sunday April 28th by 11:59PM

Training Modality Presentation Due
Sunday, April 28th by 11:59PM