

## STRENGTH AND CONDITIONING

APK6176 ~ 3 CREDITS ~ SPRING 2020

**INSTRUCTOR:** **Blain Harrison, Ph.D, ATC, CSCS**  
Office: 106B FLG  
Office Phone: 352-294-1704  
Email: blaincharrison@ufl.edu  
Preferred Method of Contact: email

**OFFICE HOURS:** Office Hours are MW periods 2 - 5 or by appointment

**MEETING TIME/LOCATION:** CANVAS platform; Florida Gym Monday Room 275 1:55 – 4:55PM

**COURSE DESCRIPTION:** This course addresses the principles of designing training programs of varying duration aimed at improving muscular strength, power, speed, agility, endurance, stability, and hypertrophy. Emphasis will be placed on creating and administering evidence-based periodized training programs and ensuring safe and productive technique of fundamental exercises in each modality.

**PREREQUISITE KNOWLEDGE AND SKILLS:** None

**REQUIRED AND RECOMMENDED MATERIALS:**

All required course materials will be provided on the APK6176 Canvas page. These materials include weekly chapter modules written by the instructor and the following research articles (additional articles may be added to weekly modules at the discretion of the instructor):

1. Kraemer, W.J., et al. *Understanding the Science of Resistance Training: An Evolutionary Perspective*. Sports Med (2017) 47:2415-2435
2. Thomas, C., Comfort, P., Jones, P.A., and T. Dos'Santos. *Strength and Conditioning for Netball: A Needs Analysis and Training Recommendations*.

- Strength and Conditioning Journal. 39(4) p. 10 - 22. 2017Fradkin, A.J., Zazryn, T.R., and J.M. Smoliga. *Effects of Warming-Up on Physical Performance: A Systematic Review with Meta-Analysis*. J Strength Cond Res 24(1): 140-148. 2010.
3. Turner, E., Munro, A.G., and P. Comfort. *Female Soccer: Part 1 - A Needs Analysis*. Strength and Conditioning Journal. 35(1) p.51-57. 2013.
  4. Williams, T.D., Toluoso, D.V., Fedewa, M.V., and M.R. Esco. *Comparison of Periodized and Non-Periodized Resistance Training on Maximal Strength: A Meta-Analysis*. Sports Med (2017) 47:2083-2100.
  5. Afonso, J. Nikolaidis, P.T., Sousa, P., and I. Mequita. *Is Empirical Research on Periodization Trustworthy? A Comprehensive Review of Conceptual and Methodological Issues*. J. Sport Sci and Med (2017) 16, 27-34.
  6. Issurin, V.B. *Benefits and Limitations of Block Periodized Training Approaches to Athletes' Preparation: A Review*. Sports Med (2016) 46:329-338.
  7. Mann, J.B., J.P. Thyfault, Ivey, P.A., and S.P Sayers. *The Effect of Autoregulatory Progressive Resistance Exercise vs. Linear Periodization on Strength Improvements in College Athletes*. J. Strength Cond Res 24(7): 1718-1723. 2010
  8. Fradkin, A.J., Zazryn, T.R., and J.M. Smoliga. *Effects of Warming-Up on Physical Performance: A Systematic Review with Meta-Analysis*. J Strength Cond Res 24(1): 140-148. 2010
  9. Shrier, I. *Does Stretching Improve Performance?* Clin J Sport Med 2004; 14:267-273
  10. Howe, L.P. *Muscle Hypertrophy: A Narrative Review on Training Principles for Increasing Muscle Mass*. Strength and Conditioning Journal. 39(5), p. 72-82.
  11. Suchomel, T.J., Nimphius, S., Bellon, C.R., and M.H. Stone. *The Importance of Muscular Strength: Training Considerations*. Sports Med 48(4), p.765-785. 2018
  12. Davis, T., et al. *Effect of Training Leading to Repetition Failure on Muscular Strength: A Systematic Review and Meta-Analysis*. Sports Med (2016) 46:487-502
  13. Schoenfeld, B. and J. Grgic. *Does Training to Failure Maximize Muscle Hypertrophy?* Strength and Conditioning Journal (2019) 41(5):108-114
  14. Soriano, M.A., Jimenez-Reyes, P., M.R. Rhea, and P.J. Martin. *The Optimal Load for Maximal Power Production During Lower-Body Resistance Exercises: A Meta-Analysis*. Sports Med (2017) 47:757-768

15. Soriano, M.A., Suchomel, T.J., and P.J. Marin. *The Optimal Load for Maximal Power Production During Upper-Body Resistance Exercises: A Meta-Analysis*. Sports Med (2017) 47:757-768
16. Seitz, L., et al. *Increases in Lower-Body Strength Transfer Positively to Sprint Performance: A Systematic Review with Meta-Analysis*. Sports Med (2014) 44:1693-1702
17. Petrakos, G., Morin, J.B., and B. Egan. *Resisted Sled Sprint Training to Improve Sprint Performance: A Systematic Review*
18. Miller, J.T.W. *Assessment and Development of Agility in Team Sports: A Brief Review of the Literature*. J. Aust. Strength Cond. 25(5) 118-124. 2017
19. Young, W.B, Dawson, B., and G.J. Henry. *Agility and Change-Of-Direction Speed are Independent Skills: Implications for Training Agility in Invasion Sports*. Int. J. Sport Sci Coach. 10(1) 159-169. 2015
20. Denadai, B.S., et al. *Explosive Training and Heavy Weight Training are Effective for Improving Running Economy in Endurance Athletes: A Systematic Review and Meta Analysis*. Sports Med. 2017. 47:545-554
21. Caterisano, A., et al. *CSCCa and NSCA Joint Consensus Guidelines for Transition Periods: Safe Return to Training Following Inactivity*. Strength and Conditioning Journal. 41(3). 2019
22. Dupuy, O., et al. *An Evidence-Based Approach for Choosing Post-exercise Recovery Techniques to Reduce Markers of Muscle Damage, Soreness, Fatigue, and Inflammation: A Systematic Review with Meta-Analysis*. Front. Physiol. 9:403. 2018
23. Barentt, A. *Using Recovery Modalities between Training Sessions in Elite Athletes. Does it Help?* Sports Med 2006: 36(9): 781-796
24. Fragile, M.S., et al. *Resistance Training for Older Adults: Position Statement From the National Strength and Conditioning Association*. J Strength Cond Res XX(X). 2019
25. Lloyd, R.S., et al. *National Strength and Conditioning Association Position Statement on Long-Term Athletic Development*. J Strength Cond Res 30(6): 1491-1509. 2016
26. Moran, J., et al. *A Meta-Analysis of Resistance Training in Female Youth: Its Effect on Muscular Strength, and Shortcomings in the Literature*. Sports Med (2018) 48:1661-1671

**COURSE FORMAT:** Students access and complete course learning materials and course assignments through the APK6176 Canvas page. One assignment is due each day of the week. Questions from the weekly module chapters are due on Mondays, Research Article questions from the articles the instructor provides on Canvas are due on Tuesdays and Wednesdays, Weekly research article synopses of articles each student selects are due on Thursdays along with a weekly training program update submission, and weekly Module Quizzes are due on Fridays. You will have access to all assignments a minimum of one week prior to their due date. Each Monday, the following week's assignments will become available on Canvas. You may work at your own pace, but you must submit all assignments by their assigned due dates.

**COURSE LEARNING OBJECTIVES:** By the end of this 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
- Predict the expected physiological adaptations of anaerobic and aerobic training programs.
- Conduct a needs analysis of a sport and an athlete within the sport
- Create a periodized annual strength and conditioning program integrating training modalities relevant to a chosen sport
- Administer 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
- Identify the biomechanical factors that influence resistance training performance
- Recommend evidence-based post-training recovery strategies to athletes.
- Identify facility administration safety considerations to limit liability risk
- Sit for the NSCA CSCS exam if desired.

## COURSE AND UNIVERSITY POLICIES:

### **ATTENDANCE POLICY:**

Active participation in the course is mandatory. Points assigned to the chapter questions, Research Article questions, YellowDig message board posts, and Weekly research article synopses are all counted as participation points. The accumulation of participation points over the semester designates the participation grade. Late submissions of weekly participation assignments will not be accepted and a grade of 0 will be given for the assignment.

### **PERSONAL CONDUCT POLICY:**

Students are expected to review and adhere to the UF Netiquette guide for online courses

<http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

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 obliged to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult the instructor or TA in this class.

#### **EXAM MAKE-UP POLICY:**

Exams may NOT be submitted late. Students will have access to exams for one week prior to the due date.

#### **ACCOMMODATING STUDENTS WITH DISABILITIES:**

Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

#### **COURSE EVALUATIONS:**

Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu> or directly in CANVAS. 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.

#### **GETTING HELP:**

##### Health and Wellness

- U Matter, We Care: If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575
- Counseling and Wellness Center: <https://counseling.ufl.edu/>, 352-392-1575
- Sexual Assault Recovery Services (SARS) - Student Health Care Center, 392-1161

- University Police Department, 392-1111 (or 9-1-1 for emergencies)  
<http://www.police.ufl.edu/>

#### Academic Resources

- E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>
- Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling. <https://career.ufl.edu/>
- Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>
- Student Complaints On-Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/> On-Line Students Complaints: <http://distance.ufl.edu/student-complaint-process/>

## GRADING:

Evaluation Components (number of each)	Points Per Component	Weighted % of Total Grade
Midterm Exam	150 points	15%
Weekly Participation Assignments	600 points	20%
Weekly Module Quizzes (15)	10 points each = 150points	15%
Training Modality Presentation	50 points	10%
Applied Program Design Project	50 points	20%
Comprehensive Final (1)	120 pts	20%

**Midterm Exam** – The midterm exam will consist of 60 multiple choice questions worth 1 point each and 5 essay questions worth 6 points each. Questions will require the application of course material to provided cases. Students are permitted access to course materials or notes during this exam. Exam questions are generated by the course instructor and students should prepare for exam by completing all weekly course readings and assignments. Students will take exam online and will have one week to complete.

**Weekly Participation Assignments** – Each week students will have one participation assignment due per day Monday – Thursday. Questions related to weekly chapter readings are due Monday, Research Article Questions are due Tuesday and Wednesday,

weekly research article synopses are due on Thursdays, and YellowDig message board posts are due by Fridays. The research article synopses assignments require the student to search the recent strength and conditioning literature for an original peer-reviewed article that relates to the topic of the module and will benefit the program design project. Students will post a brief video to YellowDig explaining the rationale for selecting the article and the aspects of the article incorporated into their training program. Students will also submit a weekly training program update on Thursday of each week related to the 12-week program design project. Peer reviews will be conducted on several of the training program updates to allow students to practice reviewing other programs to identify areas of improvement. YellowDig message board prompts will be posted Monday of each week and students will earn participation points engaging with the message board in a manner similar to familiar social media platforms. YellowDig points are earned on a weekly basis and add up over the semester for a final score input to Canvas. Each participation assignment is worth 5 points, with the exception of YellowDig posts, and will be available one week prior to the due date at a minimum.

***Weekly Module Quizzes*** – A quiz pertaining to each week’s module is due each Friday throughout the semester. The 10-12 question quiz will be available for one week and students will have 15min to complete it within that window of time. Module quizzes are open-book and open-note with questions focusing on the practical application of course material. Correct answers to module quizzes are posted Saturdays after the quiz is due.

***Training Modality Presentation*** - Students will select a strength and conditioning training modality from a list provided 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. This presentation will be uploaded to the Canvas page using the VoiceThread application so that classmates may view them. Instructions will be provided on Canvas for creating a video presentation in VoiceThread.

***Applied Program Design Project*** – Students will administer a 12-week periodized performance-training program to themselves or another individual between weeks 3-15 of the semester. Weekly updates of training progress are required to be submitted to Canvas for review by the instructor. The weekly training updates are submitted in conjunction with the weekly article synopses to allow students practice in incorporating evidence based recommendations to their program. 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 are met. A written document will be submitted to Canvas for grading and a rubric will be provided within the assignment instructions. The document is due Sunday April 26, 2020.

**Comprehensive Final** – The final exam will consist of 120 multiple-choice questions (8 from each of the 15 course modules), each worth 1 point. The exam will be completed online through the APK6167 Canvas page and will have a 2-hour time limit. The exam will be available for 24-hours on the assigned exam day according to UF’s academic calendar. Students are permitted to use course materials on the exam.

**GRADING SCALE:** All course assignments are administered and graded within the APK6176 Canvas course page, so students will have access to all grades as they submit assignments. Any assignment that requires the instructor to manually grade some aspect of it will be graded within one week of its due date, including the semester exams and final project. Final Grades will be rounded up at \_\_.5 and above. More detailed information regarding current UF grading policies can be found here: <http://gradcatalog.ufl.edu/content.php?catoid=12&navoid=2750#grades> . Any requests for additional extra credit or special exceptions to these grading policies will be interpreted as an honor code violation (i.e. asking for preferential treatment) and will be handled accordingly.

Letter Grade	Percent of Total Points Associated with Each Letter Grade	GPA Impact of Each Letter Grade
A	93-100%	4.0
A-	90 – 92.99%	3.7
B+	87.00-89.99%	3.33
B	80.00-86.99%	3.0
C+	77.00-79.99%	2.33
C	70.00-76.99%	2.0
D+	67.00-69.99%	1.33
D	60.00-66.99%	1.0
E	0-59.99%	0



## WEEKLY COURSE SCHEDULE:

Week	Dates	Topic
1	(1/6-1/10)	History of Strength and Conditioning Research Introduction, Review of Syllabus Lab – 1RM Testing and Creating SMART Goals
2	(1/13 – 1/17)	Needs Analysis Lab – Conducting a Needs Analysis
3	(1/20 – 1/24)	Periodization – Annual Plan Lab – Creating an Annual plan <b>Martin Luther King Day – 1/20</b>
4	(1/27 – 1/31)	Periodization Modality Integration Lab – Integrating Modalities into Annual Plan
5	(2/3 – 2/7)	Movement Preparation/Flexibility Training Lab – Dynamic Warm Up, PNF Stretching Technique
6	(2/10 – 2/14)	Resistance Training Basics Lab – Fundamental Resistance Exercise Techniques
7	(2/17 – 2/21)	Resistance Training Special Considerations Lab – Olympic Weightlifting Progression Technique
8	(2/24 – 2/28)	Velocity Based Training Lab – Velocity Based Training <b>Midterm Exam Due 2/28</b>
9	(3/2 – 3/6)	<b>Spring Break</b>
10	(3/9 – 3/13)	Power Training Program Design Lab – Plyometric Drill Techniques
11	(3/16 – 3/20)	Linear Speed Program Design Lab – Speed Assessment and Drill Techniques
12	(3/23 – 3/27)	SAQ Program Design Lab – SAQ Assessment and Drill Techniques
13	(3/30 – 4/3)	Conditioning Program Design and Safety Lab – Conditioning Assessment Technique

14	(4/6 – 4/10)	Recovery Modalities Lab – Self-Myofascial Release Technique
15	(4/13 – 4/17)	Age and Gender Considerations <b>Training Modality Presentation – Due 4/19 by 11:59pm</b>
16	(4/20 – 4/22)	Facility Administration <b>Applied Program Design Project due 4/26 by 11:59PM</b>

Final Exam Available for 24-hours beginning 12AM on 4/30/20. Students have 2-hours to complete the exam and it must be completed in a single sitting.

### SUCCESS AND STUDY TIPS:

- Complete all assignments. It may seem like there are too many assignments, but each one is designed to take 15min or less and is meant to engage you on a daily basis with the material.
- Read module chapters and research articles carefully
- There are lots of participation points that collectively account for a large percentage of your grade. Performing well on exams is not enough to earn an A in this course, you must participate in the course by completing all assignments.
- The midterm exam may take up to 3 hours to complete since it consists of essay questions. You will have access to the exam questions for one week prior to the due date. You should gradually work on the questions over the provided week and submit a word or pdf document to Canvas by the assigned due date.