

QUINCY UNIVERSITY EXERCISE SCIENCE ANNUAL REPORT 2017-2018

Report Summary

The Quincy University Exercise Science goals and outcomes were revised in 2018. Since Goal 1 was primarily addressed in the 2016-2017 report, Goal 2 will be addressed for the 2017-2018 year. Goal 2 addresses the students' abilities to conduct proper health screening and fitness testing. The students are assessed in PED 454 Exercise Assessment (Spring 2018) through health screening activities, case studies, and fitness assessment labs.

Quincy University's Mission Statement:

Quincy University stands as a Catholic, independent, liberal arts institution of higher learning in the Franciscan tradition. Inspired by the spirit of Francis and Clare of Assisi, we respect each person as a sister or brother with dignity, value, and worth. We work for justice, peace and the integrity of creation. We prepare men and women for leadership and for the transformation of the world by educating them to seek knowledge that leads to wisdom. We welcome and invite all to share our spirit and our life.

Exercise Science Mission Statement:

The mission of the Quincy University Exercise Science Program is to provide students the opportunities to acquire the knowledge, skills, and values that are necessary to be competent and successful in the personal training field and for post-graduate study in exercise science or other health-related programs. Students experience a Franciscan-based liberal arts education that helps prepare them to take on leadership roles in promoting and training people for physically active lifestyles and to continue their journey for lifelong learning.

QUINCY UNIVERSITY EXERCISE SCIENCE PROGRAM GOALS AND OUTCOMES

QU Exercise Science Program Goals and Outcomes	QU PED Courses	Assessments Within the Courses
1. Students will demonstrate an understanding of exercise science (functional anatomy, physiology, and biomechanics) relating to physical activity, exercise, and sport. (Assessed during first year of a four-year cycle)		
a. Students will explain the basic muscular, metabolic, cardiovascular, and neuromuscular responses to physical activity and exercise and relate how exercise affects each.	PED/SCI 345	Written Exams Labs Term Paper
b. Students will describe movements of the major joints of the body and analyze the movement patterns and muscles involved in various physical activities.	PED/SCI 344	Written Exams Labs Sport Skill Presentation
c. Students will evaluate various sport skills through biomechanical principles, joint movements and muscle use, and error identification and correction through video analysis.	PED/SCI 344	Sport Skill Presentation
2. Students will demonstrate the ability to conduct proper health screening and fitness and performance testing. (Assessed during second year of a four-year cycle)		
a. Students will demonstrate appropriate methods of health screening and interpreting the results.	PED 454	Case Studies Health Screening
b. Students will apply proper protocols when conducting performance and fitness testing.	PED 454	Performance Labs
c. Students will evaluate and interpret fitness testing results to make appropriate exercise recommendations.	PED 454	Performance Labs Case Studies
3. Students will demonstrate the ability to develop appropriate exercise programs. (Assessed during the third year of a four-year cycle)		
a. Students will correctly demonstrate and explain various exercise techniques.	PED 106 PED 246 PED 380	Skills Test Strength Training Program Written Exam
b. Students will design appropriate exercise programs using proper training variables and progressions to help address the client's needs and goals.	PED 455 PED 380	Training Programs
c. Students will design appropriate exercise programs for children, older adults, and individuals with special needs.	PED 456	Training Programs
4. Students will demonstrate an understanding of the principles of nutrition and its role in exercise and weight management. (Assessed during the fourth year of a four-year cycle)		
a. Students will apply basic knowledge of nutritional factors that affect health and performance.	PED 301 PED 345	Food Log Written Exams Grocery Shopping Project
b. Students will apply appropriate nutritional strategies to enhance training and performance.	PED 301	Case Studies
c. Students will analyze the effects of common performance-enhancing substances.	PED 301	Supplement presentation

GOAL 2: Students will demonstrate the ability to conduct proper health screening and fitness and performance testing.

I. OUTCOMES ASSESSED:

- a. Students will demonstrate appropriate methods of health screening and interpreting the results.
- b. Students will apply proper protocols when conducting performance and fitness testing.
- c. Students will evaluate and interpret fitness testing results to make appropriate exercise recommendations.

II. ASSESSMENT METHODS

- a. **Case Studies:** New health screening procedures and requirements were endorsed by the American Council of Sport Medicine (ACSM) during the 2017 year, so revisions were made to the case study assignments and final exam to address these changes. There were three case study assignments throughout the semester and one large case study final at the end of the semester. The smaller case studies contained information about a client (demographics, family history, medical history, and behavior and lifestyle factors). Students were to complete a pre-participation screening form and then analyze the information and determine if medical clearance was advised, appropriate level of exercise to start the client, identify the cardiovascular disease (CVD) risk factors, identify other areas of concern or risk, and write their analysis. Each case study was graded with a rubric and was worth 25 points. The final exam case study was a two-part test. First, students were to follow the same procedures as in the previous case studies, but without any study materials to aid them in. Once students submitted the first part, they received the second part that included data from numerous fitness tests. Students were to calculate test results, classify the client's performance on each test, and write an analysis that included recommendations for the client. The students were allowed notes and study materials to complete the second part of the test. The first part of the case study exam was worth 50 points and the second half was worth 60 points, for a total point value of 110 points.
- b. **Performance Labs:** The PED 454 course required performance labs that assessed the following categories: Blood pressure, cardiorespiratory endurance, and body composition. Muscular fitness, flexibility and Functional Movement Screening testing activities were conducted in class instead of performed as labs due to the number of students in the class and not enough days to complete all the labs. The blood pressure lab required students to explain the procedures to the client, administer the test, record the measurements, and classify the client's status. The cardiorespiratory endurance lab required the students to assess another student's aerobic capacity using either the YMCA bike test or the Astrand bike test. Students were to instruct the client, set up the equipment properly, conduct the test, monitor the client, and record heart rate and workload measurements and correctly calculate performance results for the client. The body composition lab required students to use skinfold calipers to measure their clients' body composition. Students informed their clients of the procedures, located the sites for measurement, administered the test, recorded the measurements, calculated body density and body fat percentage, and classified the candidate's results. Each lab was graded with a rubric specific to the fitness component and each lab was worth 50 points with a score of 38 for passing. If a student did not pass any section of the lab, they received a score of 25 on the lab. Students were allowed to retake the lab with the highest possible score to be recorded as a 40. Only the first attempts are used for this analysis.
- c. **Health Screening Analysis:** Students were to find a subject, preferably over the age of 45, and conduct a health screening of the subject. Students were to collect data through the following forms: PAR-Q+, medical history, and lifestyle questionnaire. If possible, students were to measure the subject's height, weight, resting heart rate, and blood pressure. Students were to then fill out a pre-participation screening form and write an

analysis of the client, addressing medical clearance, CVD risk factors, and other areas of concern or risk. The analysis was worth 65 points.

III. ASSESSMENT RESULTS

a. Case Studies:

	<u>Case Study</u> <u>1</u>	<u>Case Study</u> <u>2</u>	<u>Case Study</u> <u>3</u>	<u>Final-Part</u> <u>1</u>	<u>Final-part</u> <u>2</u>	<u>Final-</u> <u>total</u>
Average (N=7)	19.57	14.57	20.29	40.21	42.29	82.50
Points Possible	25	25	25	50	60	110
Score to Meet	18	18	18	35	42	77
Percentage						
Score Average	78%	58%	81%	80%	70%	75%
Percent						
Passing	86%	29%	100%	71%	57%	57%

b. Performance Labs

<u>Labs</u>	<u>Bld</u> <u>Press</u>	<u>Bike</u> <u>Test</u>	<u>Body</u> <u>Comp</u>
Average (N=7)	45.93	31.57	42.07
Points Possible	50	50	50
Score to Meet	35	35	35
Percent Passing	100%	29%	86%

c. Health Screening Analysis

Health Screen Analysis

Average (N=6; one did not submit work)	58.00
Points Possible	65
Score to Meet	45
Percent Passing (N=7)	86%

IV. ANALYSIS OF ASSESSMENT RESULTS

a. Case Studies

Case study 1 results are typical for the students performing it for the first time. Case study 2 had one student not submit the work, which is demonstrated in the class average. Excluding that student would make the class average 17. The second case study had more unique information about the client that students had to pay attention to more, so about half the students did not identify certain variables that affected the results. By the time the students analyzed the third case study, they were more cognizant of the information to look for and did a better job. The biggest area of concern was that several students did not differentiate between signs and symptoms of cardiovascular, renal, and metabolic diseases and cardiovascular disease risk factors. By identifying these improperly, the student could classify the client incorrectly and require the wrong necessary procedures to follow with the client.

The case study final was revised to address some of the new ACSM health screening procedures and several aspects of the test were weighted heavier than others, thus the final test score was changed from 100 to 110 points. The first part of the test was the health screening process, of which the majority of students were more proficient with this process and performed well. Two of the students still confused the CVD risk factors and signs and symptoms of major conditions and did not perform as well as the other students. The second half of the exam was calculating and analyzing fitness testing

results. These were tests and calculations that students performed in their performance labs, fitness assessment activities, and homework. Several students struggled with the calculations, thus affecting the proper classification of the client's performance. It was very frustrating that several students did not even attempt some of the calculations on the test, even though they were allowed to use their notes and textbook, plus we had several practice sessions and assignments in class. We have college students that cannot do fifth grade level math, which makes it difficult for them to do basic formulas required for the course. More time was made in this course this year to try to accommodate the students' difficulty with basic math and algebra, but it did not help on the final. The bike test calculations for $VO_2\text{max}$ and body composition calculations were the two areas several of the students struggled the most with. The other section of the second part that some students struggled with was not following the directions of a prompt that asked them to list the most important areas to address with the client based off of the fitness test results. Numerous students did not address the fitness categories based off the testing results or some wrote about areas not addressing the fitness tests. The prompt had several sections bolded to indicate the importance, but several students did not address those sections.

b. Performance Labs

Blood pressure lab scores are consistently good with scores from years past mainly due to students getting plenty of practice in class and some students get practice in other courses. The most difficult aspect to monitor during student practice is that the instructor needs to listen in to determine accurate results when the students are taking the measurement, which is difficult to do with everyone at the same time. Partners are encouraged to listen in with the other set of earpieces so that both students get practice identifying the correct numbers for the reading. The bike test, which measures cardiorespiratory endurance, was the most difficult for student this past year. Other than providing a clear explanation of the purpose of the test to the client, students followed the correct procedures for administering the test. The main issue with conducting the test was that students needed to calculate the client's $VO_2\text{max}$ by inputting the data they collected into prediction formulas. Students struggled doing the math and calculated wrong results for their clients. This then also led to misclassifications of clients' performances. If a student did not pass any section of the lab, they received a 25 out of 50 on the lab grade. Only two students out of seven passed the bike test lab on the first try. Of the five students that did not pass the test, four did not pass because they could not do the calculations correctly. One whole class period was spent practicing calculation problems, several extra practice problems were assigned, and two other assignments were added for students to perform to gain extra practice, but results were still poor. Other calculation problems and assignments also indicated that the students could not perform basic algebra and math calculations. This was extremely alarming and despite eliminating several days of content to try to help the students understand the math, performances on the final exam that required calculations of a bike test did not improve. The body composition lab is always difficult and the short period of time it is covered in the course is not sufficient for students to become proficient at it. It takes literally thousands of reps to become competent with administering this test, but it is deemed important for students to understand the basics and begin to gain the necessary experience. Overall, students performed the procedures pretty well, other than the majority of them did not have the caliper 1 cm below their thumb and index finger to record fold measurement. Most of the students had the calipers aligned with their fingers. The major problem again was that students needed to input their data into a prediction equation to determine the client's body composition. The math calculations were performed incorrectly and the students got the wrong results for their clients. Once again extra practice was provided, but it did not seem to improve students' performances on the calculations.

c. Health Screening Analysis

Students performed the health screening analysis very well, other than one student who did not complete all the requirements for the project. Students correctly identified important health factors from the various medical forms and identified the correct procedures to follow with their client. A few students made some errors on the CVD risk factors, identifying them as major signs or symptoms of known cardiovascular, metabolic, or renal diseases. The biggest struggle for students was finding a subject willing to be their client for the assignment. Other than that, students did well with the proper identification of health concerns, prescribing the correct procedures to follow with the client, and analyzing other areas of concern before starting an exercise program with the client.

V. PLANNED CHANGES BASED ON ASSESSMENT RESULTS

a. Case Studies

No changes will be made to the case study final. However, due to the difficulty of performing the calculations necessary to determine performance measurements, more practice problems will be provided and possibly one more case study assignment or practice case study to help students better identify health conditions before the actual graded assignments. Students are already provided a conversion chart to help them perform calculations using prediction formulas, but practice problems starting at a lower level and more pronounced progressions will be developed to help students understand the math and algebra basics better.

b. Performance Labs

There were issues with a bicycle ergometer breaking down during the middle the unit being taught, which left only one bike for the class to use. This prevented adequate practice opportunities for the students. Even though the biggest issue was the calculations, more practice would have been beneficial. Due to the ergometer breaking down, extra time was required to get the minimal practice for each student, and a new unit that was going to be taught was removed to complete the bike testing. A new ergometer will cost in excess of \$4,000 so if the purchase of a new bike is not possible for the upcoming year, the cardiovascular endurance unit with the bike test will be revised to where students practice the bike test, but do not administer the test as an actual lab. Students will still have assignments and quizzes on how to calculate performances from bike test data, but they will not go through the entire procedures to conduct the test on the client. This will save at least three class periods and allow another unit to be taught in the course. As with the case studies, more practice performing calculations will be provided to help students understand the basic math and algebra requirements. With the potential change in the exercise science program emphasis towards strength and conditioning, this course may add new assessment methods to address muscular power, anaerobic endurance, speed, and agility. This would then have to reduce the amount of time spent on each current unit and reduce the number of assessment methods covered for each unit taught.

c. No current changes are planned for this assessment.

VI. PROGRAM ASPIRATIONS

The main program aspiration the last two years was to meet the requirements to receive the National Strength and Conditioning Association's (NSCA) Education Recognition Program (ERP) for Personal Training. The process was nearly completed and ready for submission during the Spring 2018 semester when more discussions with students and trainers caused a change of emphasis. In a discussion with local trainers and then with several professors from several other universities, it was noted that the NSCA's Certified Strength and Conditioning Specialist (CSCS) certification carries more merit and is sought after more by organizations, fitness centers, and universities. The CSCS is more marketable than the Certified Personal

Trainer (CPT) and allows a person more options when searching for a job. The CSCS is a more difficult certification to achieve, but that also gives it more credibility. Several QU students have taken the CSCS exam and others plan to once they graduate. Taking a poll of the Exercise Science majors showed that a high majority prefer the CSCS over any other certification. Due to this information and an adjunct who had not completed the work necessary towards the CPT, the program focus is changing to pursue the NSCA's Education Recognition Program for Strength and Conditioning. As addressed last year, the ERP would authorize the NSCA to identify Quincy University's Exercise Science-Human Performance Program as having a recognized curriculum endorsed by the NSCA. The NSCA would disclose this information in publications and their websites, providing improved marketing of the QU program. Along with the marketability this recognition would provide, it also enables QU students to take the NSCA's CSCS exam at a discounted rate. Numerous program courses will need revisions to add the necessary information to them, but this should not have to change the focus of those courses. A new course will need to be developed to address program design for athletic programs. The course changes and new course design will occur during the 2018-2019 school year and should be ready for submission to the NSCA in the spring or fall of 2019.