Central Washington University  
Assessment of Student Learning  
Department and Program Report

Please enter the appropriate information concerning your student learning assessment activities for this year.

Academic Year of Report: 2009-2010        College:  CEPS  
Department Nutrition, Exercise and Health Sciences (NEHS)  
Program: Master of Science Exercise Science

1. What student learning outcomes were assessed this year, and why?
In answering this question, please identify the specific student learning outcomes you assessed this year, reasons for assessing these outcomes, with the outcomes written in clear, measurable terms, and note how the outcomes are linked to department, college and university mission and goals.

NEHS assessed four student learning outcomes. The requested information for each outcome is listed below.

A. Student Learning Outcome 1. Students will demonstrate knowledge of correctly interpreting and understanding research, and knowledge of advanced exercise physiology principles. This outcome is linked with Departmental Goal 1 which states Students will demonstrate the knowledge and skills to be successful contributors in their fields, College Goal 1, Provide for an outstanding academic and professional growth experience, and also tied into University Goals 1 and 6, Maintain and strengthen an outstanding academic and student life, and, Build inclusive and diverse campus communities that promote intellectual inquiry and encourage civility, mutual respect, and cooperation.

B. Student Learning Outcome 2. Students will demonstrate professional attributes such as attending local, regional or national conferences and skills such as writing/preparing professional communications. This outcome is linked with Department Goal 2 which states Exercise Science faculty and stunts will exhibit professional behavior that contributes to professional growth, College Goal 1, Provide for an outstanding academic and professional growth experience, and also tied into University Goals 1,5 and 6, which state, Maintain and strengthen an outstanding academic and student life, Achieve regional and national prominence for the University, and, Build inclusive and diverse campus communities that promote intellectual inquiry and encourage civility, mutual respect, and cooperation, respectively.
C. Student Learning Outcome 3. Students will demonstrate effective application of technology
skills in the acquisition of exercise physiology data, and effective communication skills using
oral, print and visual formats. This outcome is linked with Department Goal 3 which states
Academic resources will be readily available and used by faculty and students, College Goal 5,
Provide professional, high quality staffing, facilities, technologies and appropriate resources to
ensure the highest levels of academic and professional development.

D. Student Learning Outcome 4. Students will demonstrate the ability to effectively assist
professors in the classroom or lab setting and collaborate on research. This outcome is linked
with Department Goal 4 which states Faculty and Students will collaborate to promote
academic and professional growth, College Goal 1, Provide for an outstanding academic and
professional growth experience, and also tied into University Goals 1 and 6, Maintain and
strengthen an outstanding academic and student life, and Build inclusive and diverse campus
communities that promote intellectual inquiry and encourage civility, mutual respect, and
cooperation.

Reasons for assessing Student Learning Outcomes 1,2,3, and 4.
An important attribute of an individual that successfully completes graduate studies in exercise
science is an in-depth knowledge in exercise physiology that will be employed daily in various
outlets such as teaching (community or four year college), cardiac rehabilitation (hospital or
private setting), bariatric clinics, physical therapy clinics, private fitness and health clinics, and,
athletic development clinics. In addition, the added knowledge and skills obtained from a
graduate program serves students well who pursue doctoral studies. The courses and experiences
highlighted below for each student learning outcome (How were they assessed?) are geared at
enhancing the students overall fund of knowledge in exercise science, provide students with a
strong research background in order to understand and correctly interpret research, and to further
develop a student’s analytical, oral and written communication skills.

2. How were they assessed?
In answering these questions, please concisely describe the specific methods used in assessing student learning.
Please also specify the population assessed, when the assessment took place, and the standard of mastery (criterion)
against which you will compare your assessment results. If appropriate, please list survey or questionnaire response
rate from total population.

A) What methods were used?
B) Who was assessed?
C) When was it assessed?

The student learning outcome (SLO) #1, Students will demonstrate knowledge of correctly
interpreting and understanding research, and knowledge of advanced exercise physiology
principles, was assessed via EXSC 551 (Fall), 560 (Fall), EXSC 552 (Winter), 557 (Winter) and
EXSC 553 (Spring). Individuals taking these courses are graduate students in Exercise Science.
EXSC 551 (Advanced Exercise Physiology I) involves the study of metabolism and skeletal
muscle. EXSC 552 (Advanced Exercise Physiology II) is the study of pulmonary and
cardiovascular exercise physiology along with supporting networks including the nervous and
endocrine organ systems. EXSC 551 and 552 evaluated goal 1 via examinations, student
presentations, and a major written research report. EXSC 560 (Inferential Statistics in Exercise and Nutritional Sciences) evaluated SLO 1 by employing test statistics to analyze various exercise physiology data sets throughout the quarter. Students conduct the appropriate test statistic based on the study design under which the data was collected, interpret and prepare a series of reports involving statistical analysis and interpretation. In addition, students in EXSC 560 prepare a research report of a major data set. EXSC 557 (Research Methods and Design in Exercise and Nutritional Sciences) evaluated SLO 1 by examinations and preparation of a research proposal. EXSC 557 is designed to help students with those basic methods and design skills to plan a study. EXSC 553 (Laboratory Techniques in Stress Physiology) evaluated SLO 1 via written reports on select laboratory experiences. Students prepare instrumentation for physiological responses to rest and exercise, collect data, employ statistical tests on collected data, and prepare a report of their findings. This class integrates the student’s knowledge base of exercise physiology, research methods, design, and statistics. A common theme in the aforementioned course work is integration of information in exercise physiology, methods, design and statistics. For all classes, students are reading review articles and original research papers to prepare for class lecture and also to help in the preparation of written reports on select exercise physiology topics, reports on statistical analyses and interpretation, and laboratory assignments. Mastery of outcomes for the aforementioned classes was considered a grade of “B” or better.

The student learning outcome #2, Students will demonstrate professional attributes such as attending local, regional or national conferences and skills such as writing/preparing professional communications, was assessed via the extent to which exercise science graduate students attended conferences, submitted and presented research. Criterion for this outcome was that 50% of exercise science graduate students will attend a local, regional or national conference, and that 25% would submit a research abstract. Such accomplishments are highlighted to faculty and students in the program by the Graduate Director. Director of Graduate Studies and faculty encourage students to attend professional meetings and to submit research abstracts for peer review. In addition, the Graduate Director and faculty inform students of any upcoming conferences, and opportunities to submit a research abstract for peer review. Graduate students are made aware (by the Graduate Director and faculty) of any presentations that have been or will be delivered by a graduate student. Such accomplishments are assessed at the conclusion of the academic year.

The student learning outcome #3, Students will demonstrate effective application of technology skills in the acquisition of exercise physiology data, and effective communication skills using oral, print and visual formats, was assessed via EXSC 551 (Fall), 560 (Fall), EXSC 552 (Winter), 557 (Winter) and EXSC 553 (Spring), and EXSC 700. Mastery of this outcome was considered that 90% of graduate students would successfully incorporate the use of technology as related to measurements of human performance and in the preparation and delivery of research presentations. Student learning outcome #2 is a critical component in the evaluation of a student’s academic performance as highlighted in the various facets associated with student learning outcome #1.
For EXSC 551 (Advanced Exercise Physiology I), and EXSC 552 (Advanced Exercise Physiology II), students utilize Power Point to present (oral) on an exercise physiology topic to faculty and fellow classmates. In addition, students prepared a major written research report as part of their assessment. Students in EXSC 560 (Inferential Statistics in Exercise and Nutritional Sciences) prepared a series of weekly written statistical reports utilizing SPSS and Microsoft Word. In addition, students in EXSC 560 prepare a research report on a major data set, again, employing SPSS and Microsoft Word. EXSC 553 (Laboratory Techniques in Stress Physiology) is a five credit class in which students are expected to (1) competently perform a variety of assessments of structure and function at rest and during exercise, (2) understand the anatomical principles that govern the structure of the human body, and to understand the theory that underlies various morphological assessment techniques, (3) understand the physiological principles that control the functioning of the human at rest and during exercise, and understand the theory that underlies various physiological assessment techniques, and (4) apply the principles of statistics and research design by completing data analyses and by recognizing the multitude of factors that may invalidate research findings. In the laboratory, students apply technology to measure and better understand thermoregulation, metabolic rate, heart rate response, fuel use, pulmonary function, body composition, cardiovascular capacity, efficiency of motion, and biochemical responses under conditions of rest and exercise. Students employ their knowledge base of exercise physiology, statistics, methods and design in the preparation of written reports on the aforementioned laboratory experiences.

The student learning outcome #4, Students will demonstrate the ability to effectively assist professors in the classroom or lab setting and collaborate on research was assessed via job performance related to duties associated with the Exercise Science Graduate Assistantship and EXSC 700 and 595. Mastery of this learning outcome was considered the following: (1) Ninety percent of graduate assistants having responsibilities in assisting professors will satisfactorily execute their responsibilities as noted by the professor, (2) Ninety percent of students will successfully complete their final culminating experience (Thesis, Project, Examination) as noted by a satisfactory score by the graduate committee during their final quarter of study, and (3) Fifty percent of students completing EXSC 700 or 595 work will submit a research abstract to a local, regional or national meeting. Graduate students assist professors in lecture (holding study sessions, assist in grading select assignments), laboratory setting (preparation, assisting during the actual lab in demonstration and acquisition of data), conducting anatomy/physiology study sessions, supervising exercise science practicum students and conducting fitness testing for the University community and community at large, and assisting with research. In addition, graduate students teach physical activity classes for the Physical Education program. The above responsibilities occur throughout the academic year and assessment of their performance is quarterly. For purposes of this report, an overall result regarding mastery of criterion is reported for 2009-2010.
3. **What was learned?**

In answering this question, please report results in specific qualitative or quantitative terms, with the results linked to the outcomes you assessed, and compared to the standard of mastery (criterion) you noted above. Please also include a concise interpretation or analysis of the results.

Student learning outcome #1, *Students will demonstrate knowledge of correctly interpreting and understanding research, and knowledge of advanced exercise physiology principles.*

For EXSC 553 and 560, 100% of students achieved the standard of mastery, whereas for 551, 552 and 557,... 91, 94 and 94%, respectively, of the students achieved the standard. For EXSC 551, 552 and 560, 91, 83, and 91% of the students achieved a 3.0 or better on a major project (i.e., oral presentation, written research report). These findings meet our mastery criterion and suggest that students are achieving a level of academic understanding of exercise physiology, statistical, and research methods/design principles that will serve them well for the successful accomplishment of a final culminating experience (Thesis, Project, Examination). Specifically, meeting the established criteria is indicative that the student has substantially enhanced his/her knowledge base of exercise physiology, and has acquired skills to correctly interpret research in their own area, and has demonstrated an appropriate level of oral and written communication skills.

Student learning outcome #2, *Students will demonstrate professional attributes such as attending local, regional or national conferences and skills such as writing/preparing professional communications.*

The following findings meet our mastery criterion for student learning outcome #2. Fifty percent of our current graduate students attended a local conference, while 35% (previous year, 28%) submitted a research abstract. Fifty percent of students who graduated in June 2008 submitted and presented research at a National meeting. These individuals presented research stemming from their thesis and collaborative efforts with exercise science faculty. Research abstracts were published in a supplement of Medicine and Science in Sport and Exercise. Although we met our criteria for this learning outcome, the exercise science faculty would still like to see more of our students attend professional conferences. The magnitude to which our exercise science graduate students attend conferences seems to vary and is influenced by level of personal interest, other academic activities such as preparing for examinations or finishing classroom projects at the time of the meeting, research paper acceptance and financial support to help defray costs associated with conference attendance. Although down from the previous year, the exercise science faculty is still pleased to see 50 percent of our students who graduated in June 2009 present and/or be significant contributors to research presented at either regional or international sports medicine meetings. In general, these findings suggest that faculty and students are collaborating on research and that students (and faculty) are making an extra effort to disseminate research findings beyond the departmental and University boundaries.
Student learning outcome #3, **Students will demonstrate effective application of technology skills in the acquisition of exercise physiology data, and effective communication skills using oral, print and visual formats**

One hundred percent of our students successfully employed technology in the acquisition of data, and in the preparation and presentation of oral and written information. This finding meets our mastery criteria for student learning outcome #3. Exercise Science graduate students are employing technology for classroom presentations starting their first quarter of graduate studies and continue to acquire additional technology skills for the assessment of human physiology as they progress through the curriculum. By the end of the first academic year, our graduate students have demonstrated success in acquiring technological, oral and written skills that will serve them well in effectively completing their final culminating experience (Thesis, Project, Examination), assisting fellow classmates and professors in a research setting, and dissemination of research in peer-reviewed venues.

Student learning outcome #4, **Students will demonstrate the ability to effectively assist professors in the classroom or lab setting and collaborate on research.**

One hundred percent of GAs in exercise science satisfactorily executed their responsibilities of assisting in the exercise science program and teaching physical activity courses. This finding meets our established criteria.

To date, 89% of second year graduate students (2010 class) have successfully completed their final culminating experience (Thesis, Project, Examination) which currently falls short of our target of 90%. It is anticipated that the remaining second year graduate student will complete the final experience this Summer. Historically, the exercise science graduate program has a high success rate in students that complete their Master of Science degree.

Fifty percent of graduate students who graduated in June 2009 presented (primary and/or secondary author) research at a regional or national meeting. This number is down from the reported 71% from the previous year. Regardless, exercise science graduate students have an established history of presenting research at refereed conferences suggesting the following: (1) effective mentoring of students in the research process, (2) students have acquired those skills necessary to collaborate with fellow students and faculty on research, and (3) that our program has been successful at dissemination of research beyond the University walls. The faculty intend to continue collaborating with students on various research endeavors and to present findings in peer reviewed venues.
4. **What will the department or program do as a result of that information?**

   In answering this question, please note specific changes to your program as they affect student learning, and as they are related to results from the assessment process. If no changes are planned, please describe why no changes are needed. In addition, how will the department report the results and changes to internal and external constituents (e.g., advisory groups, newsletters, forums, etc.).

   Overall, this report provides evidence that student learning outcomes for the Master of Science in Exercise Science were attained. Outcomes were assessed and compared to a-priori established standards of mastery. The faculty believe that the graduate exercise science curriculum is appropriate. Exercise science graduate students gain the appropriate knowledge base in exercise physiology, statistics, methods/design and acquire appropriate technological skills to effectively complete their final culminating experiences (Thesis, Project, Examination) and present research at the local, regional and national level. Faculty also believe that the graduate assistantship experience provided to our students (teaching, conducting study sessions in anatomy, physiology and exercise physiology, supervising fitness testing and assisting in research) is priceless.

5. **What did the department or program do in response to last year’s assessment information?**

   In answering this question, please describe any changes that have been made to improve student learning based on previous assessment results. Please also discuss any changes you have made to your assessment plan or assessment methods.

   The department did not make any changes this past year.

   Thank you.

   [Attachment A](#)