Institutional Effectiveness
2023-2024

Program: Exercise Science BS
College and Department: College of Education, Department of Exercise Science
Contact: Christy Killman
Mission:

The mission of the department of Exercise Science is to promote enhanced quality of life (wellness) and strengthen educational pursuits by creating, advancing, communicating, and applying knowledge and skills, through innovative preparation of scholars, researchers, educators, and professionals to meet the needs of a diverse society. (Directly linked to Tech Tomorrow Strategic Goal One – Education for Life; priority actions A, C, D & E. Also linked to Goal Two – Innovation in All We Do; priority actions B and C.)

Mission Brief: Be prepared for service to enhance the quality of life for a diverse society.

Vision: Prepare future professionals to be effective and engaged through clinical rich and evidenced-based programs.

Attach Curriculum Map (Educational Programs Only):
Attached Files: See Appendix 1

SLO1: Physical Fitness

Define Outcome:
Exercise Science majors will demonstrate health-enhancing levels of fitness by satisfying standardized criteria for muscular strength/muscular endurance, flexibility, cardiorespiratory endurance, leg power, grip strength and body mass while participating in the annual physical fitness assessment.

Assessment Methods:
Fitness Test once per academic year - The tool used in the administration of this fitness assessment is a nationally normed, proprietary assessment with demonstrated validity and reliability. Each student in Exercise Science must take the fitness test once per academic year - either on the fall rotation or spring rotation. Graduate assistants are test administrators who are supervised by a faculty member and are professionally trained bi-annually on proper test administration protocols for each of the test components. Undergraduate majors who are enrolled in 9 credit hours or more sign up for a section of the test through eagle online. Students enrolled must meet 4 times to satisfy the requirement set forth by the department.

Students complete the PAR-Q (physical activity readiness questionnaire), fill out their personal fit index and walk through demonstration of each test during the first meeting. The second meeting is for practice/questions and to collect body mass data from each student. The third meeting includes administration of all tests except cardiorespiratory endurance and flexibility, which are administered on the fourth and final day of testing. Each undergraduate student must pass 5 of 6 different tests according to the health enhancing level of fitness criteria. If any student does not satisfy this requirement, the graduate assistant works with the student, providing information and support related to improvement in that area of fitness. Students have multiple opportunities to improve and satisfy the requirements. (Score sheet with national norms attached)

Attached Files: See Appendix 2

Criteria for Success (Thresholds for Assessment Methods):
Individuals are provided the criteria required for health-enhancing levels of fitness prior to taking the fitness test. As such, the fitness assessment criteria used reflects that level of performance for each of the 6 components being measured. Students are also given a demonstration of the proper way to finish each test (as needed). Two sets of criteria (male and female) are utilized in assessing student fitness.

Health-enhancing levels of physical fitness scores for females:

- Bench press test using 35 lbs/16 reps to the beat of a metronome. {muscular strength/endurance}
- Sit and Reach, which tests flexibility, greater than or equal to 16 inch reach with legs straight.
- Leg Power is tested by vertical jump. Female passing score is 12 inches or higher.
- Grip Strength is measured by a grip dynamometer. Females should score at least 54kg per hand.
- 1.5 mile run measures cardiorespiratory endurance. Females should complete in 18 minutes,30 seconds or less.
- Body composition is measured by bioelectrical impedance which requires student height and weight. Females are good with 16-28% body fat.

Health-enhancing levels of physical fitness scores for males:

- Bench press - 80lbs/20 reps
- Sit and reach - 13 inches minimum
- Leg Power - 16 inches or more
- Grip strength - 84kg per hand
- 1.5 mile run - 14 minutes or less
- Body Composition - 8-22%

Link to 'Tech Tomorrow' Strategic Plan:
1.A Experiential Learning,1.D High Impact Practices

Results and Analysis:
During the 2023-2024 academic year, 429 undergraduate Exercise Science majors completed the required physical fitness test. Results for a randomly selected sample of students [(N=142) 89 students from the fall semester and 53 in the spring semester] were examined. When compared to national norms for this age group, the percentage of students in the sample group who 'passed' 5 of the 6 tests with a health-enhancing level of fitness was overall high. The table below outlines the results of the sample group.

When compared to the previous academic year, student outcomes are similar with highest numbers and percentages meeting the health-enhancing threshold in cardio endurance, flexibility and muscular strength, and falling short of the national norms in grip strength, leg power and body composition. Scores from the sample group indicate high pass rates for health-enhancing levels of fitness in both comparison groups.

Fitness Scores of Sample group for academic year 2023-2024.

Sample size N= 142 [approximately 1/3 of total number of completers]

	# pass	# not pass	% pass	% not pass
Cardio Endurance	129	13	91%	9%
Flexibility	117	25	82%	18%
Muscular Strength	122	20	86%	14%
Grip Strength	99	43	70%	30%
Leg Power	109	33	77%	23%
Body Composition	96	46	68%	32%

Use of Results to Improve Outcomes:

What we learned from the 22-23 academic cycle was to have more sections with fewer students per section to aid in effectiveness of the test administrators and to expedite the testing process. In addition, Dr. Wynn, TT faculty member took the fitness test administration responsibility on as part of his service (and research) to the department. As such, he coordinated graduate assistants, including training. Having Dr. Wynn in attendance at each fitness testing session proved to keep things on track, helped with absenteeism and provided validity to the fitness test.

What we learn from these data is that exercise science students score high for the third year running in carido endurance, flexibilty and muscular strength but continue to struggle with grip strength, leg power and body composition. When comparing to the previous year, the last 3 catagories have lower percentages of passing this year than last. This is a strong indication that students need to prepare for these tests.

To assist in doing so, it was recommended that students purchase a manual for PHED 1002 - Fitness Test that will be constructed to serve students for their 4 years (4 tests) in the department. In the manual, students will find definitions, explanations, national norms, detailed breakdown of how each test is administered and potentially most importantly, an information section outlining and providing resources for the students to increase their score on each of the test components.

With a tighter and more structured testing environment, fitness test data can be studied because scores are more accurate and test takers are taking the process more seriously and working toward health-enhancing levels of fitness.

SLO2: Knowledge and Understanding of Basic Research

Define Outcome:
Exercise Science students will demonstrate understanding of the basic methods of research by meeting outlined criteria from a teacher created rubric on the final project (key assessment) in EXPW 4730 - Assessment in Exercise Science and by meeting the outlined criteria on the final project (key assessment) in EXPW 4900 - Research Methods.

Assessment Methods:
Study design, data collection, analysis and presentation project in EXPW 4730 - Assessment in Exercise Science. For the final key assessment in EXPW 4730, students must apply understanding of basic research concepts working in a small group to design a study, collect data, analyze data and present their projects to peers. All students are 'subjects' of all studies in this class, causing this project to be directly linked to activity of some sort, which causes students to apply knowledge from other courses in their study design and data collection. Class time is provided for data collections by each of the groups. The instructor created rubric provides guidance for students in preparing and presenting their research. Even though this is a group project, each student is scored individually according to their contribution to and presentation of the research (rubric attached).

In EXPW 4900 - Research Methods, students learn about basic research principles throughout the semester. This is measured at the end of the semester using a research design project. Students are provided detailed instructions and the instructor sets up special times for students to confer about their project. Depending on the number of students in the class, this key assessment/project could be individual or small group. During fall 2023, the key

assessment/project was conducted in the small group format and in the spring 2024 semester, because the class was smaller, students did an individual project. (assignment and rubric for each semester attached).

Criteria for Success (Thresholds for Assessment Methods):
In EXPW 4730, students are given the scoring rubric at the onset of the project. The rubric associated with the key assessment project is the guide to success for students. Each area of inclusion is provided with point values assigned. If students use the rubric as a guide, they are likely to perform well in demonstrating their knowledge and understanding of basic research concepts.

The professor goes over the expectations thoroughly in class. Students collaborate on the project from identifying to presenting, but each is scored individually. Students must find articles, collect data, have a solid title and introduction, describe the research method, present the results, address practical implications and conduct themselves in a professional manner while speaking and the visual (power point).

The maximum number of points on the rubric is 50. The usual grading scale is used in a modified form. For example if 90-100 is an A, then 45 of 50 possible points is an A on this project, and so on.

In EXPW 4900, students are given the scoring rubric at the onset of the project. The rubric associated with the key assessment project is the guide to success for students. Each area of inclusion is provided with point values assigned. If students use the rubric as a guide, they are likely to perform well in demonstrating their knowledge and understanding of basic research concepts.

The professor goes over the expectations thoroughly in class. Students collaborate on the project from identifying to presenting, but each is scored individually. Students must find articles, collect data, have a solid title and introduction, describe the research method, present the results, address practical implications and conduct themselves in a professional manner while speaking and the visual (power point).

Link to 'Tech Tomorrow' Strategic Plan:
1.A Experiential Learning,2.B Research, Scholar, Intellect, and Creativity

SLO2 Results: Research

Results and Analysis:
For the research objective, data from the key assessments in both EXPW 4730 and EXPW 4900 in fall 2023 and spring 2024 were examined. In 4730 - Assessment students are scored in 6 main areas on their individual contribution to the project. Results are presented.

EXPW 4730 Key Assessment Data

2023-2024

3 sections N=72

[CAMPUS LABS IMAGE PLACEHOLDER]

Rubric Item

Mean on 3.0 scale

22-23 mean for comparison [N=88]

Article

2.77

2.72

Data Collection

2.51

2.28

Title/Intro

2.67

2.79

Methods

2.31

2.1

Results

2.03

1.97

Conclusion

2.48

2.41

Aesthetics

2.71

2.88

APA

2.59

2.62

Overall

2.51

2.47

Comparing to the previous academic cycle, we see that overall mean scores were higher in 5 of the 8 areas being scored, and the overall mean was up from the previous year. The recommendation from the previous cycle to assign groups was implemented and these data indicate this was a good move for student learning and success. In general the scores are high, with APA, aesthetics and title/intro slipping just a little from the previous year. There could be many different reasons this could happen including the creativity and personality of the students, or the professor may not have been as strict in teaching APA or students may have experienced difficulties in using the APA format for the project. Significantly, the mean increased in areas of data collection, methods and results, indicating extra attention being paid to and time spent on these areas.

In the EXPW 4900 course, there were 21 students in the fall and 41 students in the spring, totaling 62 for the academic year. The course syllabus presents the same objectives for both semesters, yet the key assessment changed from fall to spring. Therefore, both projects and rubrics are presented here. Numbers presented vary from enrollment due to various circumstances, such as students stopped attending and did not participate in the final research design project, or received the grade of incomplete because of special circumstances. The

attached reports indicate scores for 16 of 21 students in the fall 23 semester and 38 of 41 students in the spring semester.

What can be concluded from the final scores is that overall, students have a good comprehension of research design by the end of the semester/course. In the fall semester there were 8 A's, 5 B's, 1 C's, and 2 D's, and in the spring grades on the research project and presentation were 2 A's, 15 B's, 11 C's, 7 D's, and 3 F's. If we consider the grade of C or better to indicate learning and understanding, then 88% of the students in the fall semester and 75% of the students in the spring semester successfully learned/understand research design.

Use of Results to Improve Outcomes:

Both professors provide exceptional support opportunities for students as they prepare for, participate in, and report on these research projects. Moving forward, each will continue to hone the assignments to include things like AI and advanced technologies in equipment to maximize student learning.

In addition, we will provide opportunities for students to have individualized assistance if requested to maximize learning and opportunities for success.

SLO3: Knowledge of the Field

Define Outcome:
Exercise Science majors will demonstrate knowledge in the field by answering correctly 80% or more of identified concept questions on the final exam in EXPW 3410 - Motor Development and EXPW 3170 - Motor Learning.

Assessment Methods:
Questions on the final exams in both the identified courses are directly linked to the learning objectives outlined in the course syllabi.

EXPW 3410 and EXPW 3710 include foundational concepts that most classes in Exercise Science depend/build heavily on. These courses have key concepts, ideas or theories that are monumental to understanding development and learning related to motor skills, and mature, efficient movement. On the final cumulative exam in both courses, the key components (directly related to the course objectives) are assessed along with other relevant information for each course. 12-15 questions on the final exam are dedicated to these key components. Students are expected to answer identified questions with 80% or higher accuracy to indicate mastery. (Key questions for both courses and student objectives are attached)

Instructors use Scantron answer sheets, therefore there is nice data related to each test question, but for purposes of this exercise, we look only at the questions identified as being

directly linked to one or more of the course objectives. There are at least 2 questions per objective on the final exam in each of the courses.

Attached Files: See Appendix 3

Criteria for Success (Thresholds for Assessment Methods):
Students will demonstrate their knowledge of the field by answering key identified questions on the final exam in Motor Development and Motor Learning classes with 80% accuracy.

The expectation is for students to score as well as they can on the exams, but for this exercise, 12-15 questions have been identified as benchmarks of understanding for key important concepts in the field of exercise science. The questions are linked to specific learning objectives with the metric of 80% or higher correct answer rate set as the minimum standard.

Link to 'Tech Tomorrow' Strategic Plan:
1.A Experiential Learning,2.B Research, Scholar, Intellect, and Creativity

Results and Analysis:
EXPW 3410 - Motor Development and EXPW 3170 -Motor Learning are core courses that provide foundational knowledge that many other courses in exercise science build upon. As such these courses are required for all concentrations except Sport Administration and both are directed electives in that concentration.

The final exam in 3410 – Motor Development presents 14 questions that have been identified as relevant in measuring understanding of and meeting the expectations of six learning objectives listed on the course syllabus. (Objectives with test questions attached). The final exam in 3710 – Motor Learning presents 15 questions that have been identified as relevant in measuring understanding of and meeting expectations of four learning objectives listed on the course syllabus. (Objectives with test questions attached)

Motor Development

During the 2023-24 academic year a total of 65 students took EXPW 3410. Test papers for the 65 students were examined and answers were tallied for each of the 14 questions. The results are presented below. Questions were linked to the corresponding objective. The number of students and percentage of students who got correct answers per objective is presented below. To be labeled as “passing”, the student had to get all the questions for that objective correct on the exam.

Academic year 23	# passed	% passed
Objective 1	66	80
Objective 2	76	93
Objective 3	77	94
Objective 4	67	82
Objective 5	79	96
Objective 6	72	88

Academic year 24	# passed	% passed
Objective 1	56	86
Objective 2	60	92
Objective 3	59	91
Objective 4	55	84
Objective 5	61	94
Objective 6	53	81

In looking at the comparisons of the 2 years on questions for each of the 6 objectives, one sees that students are coming in about the same or a little higher in gaining content knowledge related to motor development.

Motor Learning

Most students who major in exercise science must take EXPW 3170 - Motor Learning in addition to EXPW 3410. Some students from outside the major also take these classes, but the numbers are low in comparison. The tables below show student performance on questions from the final exam in 4 sections of EXPW 3170 during the 23-24 year. There are 4 objectives measured (attached) and identified as

1. Theoretical approaches,

2. Principles and processes,

3. Human motor behavior, and

4. Instructional situations.

Specifically, questions 21, 36, and 49 address Objective 1. Questions 4, 12, 14, 22, and 25 address Objective 2. Questions 19 and 33 address Objective 3 and questions 28, 30, 31, 34, and 56 address Objective 4.

There was a total of 127 students in 4 sections in the fall semester and the spring semester. All students are considered in the tables below which indicates the percentage of students who answered the question correctly on the final exam.

Objective 1	21	36	49
% Correct	86.42	69.01	49.42
LAST YEAR	86.5	54	53.5

Objective 2	4	12	14	22	25
% Correct	96.75	97.5	96.25	69.42	80.00
LAST YEAR	95	96.5	95	64.5	81

Objective 3	19	33
% Correct	79.27	73.09
LAST YEAR	76.5	69

Objective 4	28	30	31	34	56
% Correct	90.91	93.94	72.73	70.69	93.94
LAST YEAR	94	89.5	71.5	74.5	94

In comparing passing percentages for each of the questions being assessed, students scored about as well or better than last year.

Use of Results to Improve Outcomes:
The instructors of these courses offered extra study help to students who were struggling with concepts. GA mentors provided tutoring in the department to students who reached out needing help. Potentially, tutoring and extra help can help students understand concepts. It's not clear how many students took advantage of the offer, especially since percentages from year to year in the respective courses are similar. Extra help and tutoring will continue to be offered to students. Instructors will continue to pair students with tutors upon request. It is recommended that some of the test questions be revisited, especially the ones where there are lower percentages of students who passed.

Summative Evaluation:
For the 3 assessment areas in the undergraduate program (Physical Fitness, Basic Research, and Knowledge of the Field) we find that students continue to perform 'above average' overall. These results are pleasing, however, faculty strive to continue to be better and do better, providing various supports beyond the regular classroom for our students.

Adding 2 subjects - Motor Learning and Research Methods to the assessment piece gives more data and is more telling of what Exercise Science students know and are able to do.

The newest method of administering the fitness tests to all majors once per academic year is proving to provide needed validity and reliability to the process and scores. The student survey provided valuable insight to the fitness testing process.

Assessment Plan Changes:
Questions on the motor development and motor learning final exams will be revisited to determine if they are appropriately stated to evaluate student knowledge of the identified objectives. A high-level view indicates some questions have a very high pass rate and some very low, thus needing to be revisited in the coming academic year.

List of Appendices:
Appendix 1: Exercise Science BS Curriculum Map
Appendix 2: SLO1 Assessment Methods
Appendix 3: SLO3 Assessment Methods

Appendix 1: Exercise Science BS Curriculum Map

Appendix 1: Curriculum Map

Exercise Science BS

Course	Title	Goals/Learning Outcomes		
		Physical fitness	Research skills	Knowledge of the field
EXPW 1022	INTRODUCTION TO EXERCISE SCIENCE		X	
EXPW 3032	EXERCISE PRESCRIPTION		X	X
EXPW 3410	MOTOR DEVELOPMENT		X	X
EXPW 4032	TRAINING FOR PERFORMANCE	X	X	X
EXPW 4420	KINESIOLOGY	X	X	X
EXPW 4440	EXERCISE PHYSIOLOGY	X	X	X
EXPW 4730	ASSESSMENT IN EXERCISE SCIENCE		X	X
EXPW 4731	ASSESSMENT IN PHYSICAL EDUCAITON		X	
EXPW 4810/4820/4830	FIELD EXPERIENCE			X
EXPW 4751/4752	PRACTICUM (SECONDARY/ELEMENTARY)			X
EXPW 4900	RESEARCH METHODS		X	
EXPW 4991	INDEPENDENT STUDY		X	
PHED 1002	PHYSICAL FITNESS TEST	X		

Appendix 2: SLO1 Assessment Methods

Department of Exercise Science, Physical Education &
Wellness Fitness Assessment Record

Name & T# _____

Concentration _____ Section _____

Test	Criteria	Score	Initialed By	Pass or Fail
YMCA Bench Press Test	M-80lbs/20 reps F-35lbs/16 reps			
Sit and Reach	M-≥ 13 in F- ≥ 16 in			
Leg Power	M- ≥ 16 in F- ≥ 12 in			
Grip Strength	M – 84kg F – 54kg			
Body Composition (BMI and BF%)	M&F<25 M:8-22% F:16-28%			
1.5 Mile Run	M – 14:00 or less F – 18:30 or less			

Date and Time of Test Administration _____

Appendix 3: SLO3 Assessment Methods
Motor Learning Objectives and Questions

Objectives of the Course:

After successfully completing this course, you should be able to do the following:

- Describe the theoretical approaches that drive motor control and learning research.
    - 21, 36,49
- Describe and explain the principles and processes underlying skilled performance.
    - 4, 12, 14, 22, 25
- Illustrate the ways in which the human motor system supports the acquisition and retention of complex movement skills.
    - 19, 33
- Demonstrate how instructional situations can be varied in order to better achieve maximum performance and retention of taught skills.
    - 28, 30, 31, 34, 56