Agendum
Oakland University
Board of Trustees Formal Session
December 10, 2018

BACHELOR OF SCIENCE IN EXERCISE SCIENCE
A Recommendation

1. **Division and Department:** Academic Affairs, School of Health Sciences

2. **Introduction:** Oakland University (OU) proposes a new program in exercise science at the bachelor level. The Bachelor of Science in Exercise Science (BS in EXS) program will be offered in the School of Health Sciences (SHS). A distinct study concentration in pre-physical therapy, for those students preparing to become physical therapists and applying to doctor of physical therapy programs, will be offered.

The Exercise Science (EXS) Program in the School of Health Sciences has a long history of expertise having offered a Master of Science in Exercise Science since the 1970s, later followed by an undergraduate study concentration and minor. The school also offers a pre-physical therapy concentration. There are currently approximately 400 students in the exercise science and pre-physical therapy concentrations. Despite the interest and demand for a major in exercise science, the limitations of space, equipment and faculty have hindered the development of a bachelors degree in exercise science. These limitations have been overcome. The SHS moved to the Human Health Building which has provided the needed space for the EXS labs. Through the broader formation of the department of human movement science, thoughtful utilization of one-time funding to meet core equipment needs, and the recent addition of a new faculty member in a critical area, the school is now well-positioned to grow, and to develop the BS in EXS undergraduate degree program.

In direct support of student academic and career pursuits, the BS in EXS degree program will build upon the courses currently offered in our concentrations. Given the interest in exercise science both as a field of study and for preparation to graduate school, this degree program has the potential to draw new students, as well as better serve those already at the university. The proposed BS in EXS will meet university degree requirements, provide a strong foundation in the natural and behavioral sciences, excel in exercise science, and provide students opportunities for practicum, research, and laboratory experiences. The degree program will prepare graduates for positions in the profession and for competitive graduate degree programs.

Need for the Bachelor of Science in Exercise degree at Oakland University

Exercise science is a growing profession. The employment opportunities for exercise science professionals is expected to grow by ten percent between now and 2026, according to the Bureau of Labor Statistics. This is faster than the average for most occupations. An increased emphasis on health, wellness, and weight loss along with an aging population has widened the job opportunities. The students are typically preparing for work in the field of exercise science (exercise physiology, cardiac rehabilitation, fitness/personal training/health) or for graduate studies including masters/doctoral degree in exercise science, kinesiology or human movement science; the doctor of physical therapy (DPT) degree; or other health professional degree programs. While the current concentrations and the minor in EXS have helped to prepare students for these positions and for graduate school, a BS in EXS is the preferred preparation and is a better fit to meet the demands of positions in the field of exercise science and graduate school requirements. Specifically, the BS in EXS is now the most common degree for students accepted to and enrolling in the doctor of physical therapy (DPT) degree programs (Physical Therapist Centralized Application Service: 2016-2017Applicant Data Report. *2016-2017 Admissions Cycle for the 2017 Entering Class. American Physical Therapy Association. Dec. 2018)*. For exercise science professionals to progress in positions in the field and related fields, pursuit of American College of Sports Medicine (ACSM) certifications is important, for which a BS in EXS is now the requirement.

A major in EXS will allow students to take more EXS courses providing the necessary depth and breadth of education and experience. A BS in EXS will provide a strong academic background in the foundational courses of exercise physiology, motor control, and biomechanics along with research and practicum experience in exercise prescription and testing, fitness training, and strength and conditioning: Students interested in pursuing positions and graduate degrees in fields that require this academic background and experience will be able to receive the degree that best meets their career goals. Students interested in EXS and physical therapy will be recruited and enrolled in their major area of interest as freshman or as transfer students, and the BS in EXS degree provides a strong recruitment pool for graduate programs at Oakland.

We seek approval by the Board of Trustees for this Bachelor of Science in Exercise Science, so that the program can welcome the first students in the Fall 2019 semester.

3. **Previous Board Action:** None.

4. **Budget Implications:** We estimate that there will be 428 students enrolled during the first year of which approximately 400 of those students will be current students and 28 of those students will be new students. The estimated number of students is expected to build to 512 by year 5. As our foundation resources are already well established, the SHS expects that the BS in EXS will produce a net income each year reaching by year 4 over $1 Million annually. The 5 year accumulated net income over the life of the pro forma budget shall exceed $3 Million. A pro forma budget is included as Attachment B.

5. **Educational Implications:** The BS in EXS supports and is in concert with the mission of Oakland University. Students will be engaged in impactful educational and research experiences in the BS in EXS. Educational opportunities include laboratory experiences, service-learning activities and hands-on skill development. Students will participate in internship and practicum experiences in Michigan that will provide opportunities to interact with and learn from diverse communities. Students will participate in faculty-driven and student engaged research and scholarship. Exercise science faculty members currently mentor undergraduate and graduate research students, and students are presenting research locally, regionally and nationally. In addition, students will have the opportunity to participate in leadership and service activities. SHS offers a leadership program, ECLIPSE, in which students in the BS in EXS may participate to develop their leadership skills. The proposed BS in EXS will prepare students for careers in fields such as exercise physiology, cardiac rehabilitation, fitness/personal training, health and wellness and community programs leadership. The BS in EXS also prepares students to apply to graduate school (at Oakland University, and others) for advanced degrees in exercise science or movement science or for graduate professional programs such as the doctor of physical therapy.

6. **Personnel Implications:** Current faculty members who teach in the exercise science program are well qualified to offer the bachelor degree program. For initiation and maintenance of this new program, support personnel including one full-time clerical staff member and one full-time lab manager will be employed.

A special instructor is requested for year 2 of the program to prepare students for and to teach the practicum courses. The special instructor will also be responsible for developing, managing, and coordinating the practicum sites. As the number of students and credits to be delivered increase, there will be a need to hire two Assistant/Associate professors (one in year 3 and one in year 4) with expertise in exercise science to teach upper level courses, laboratory courses and mentor undergraduate student research. These faculty will supplement the teaching of current faculty, enhance the research endeavors of undergraduate and graduate students, and contribute to the scholarly activity in the school. Graduate assistant positions are budgeted to provide assistance in the laboratory and in the undergraduate directed research courses as well as to participate in and conduct research.

7. University Reviews/Approvals: The proposal for a Bachelor of Science in Exercise Science program was reviewed and approved by the SHS Committee on Instruction, SHS Assembly, SHS Dean Kevin Ball, PhD, University Committee on Undergraduate Instruction, Oakland University Senate, and the Senior Vice President for Academic Affairs and Provost.

8. Recommendation:

WHEREAS, the Bachelor of Science in Exercise Science program is consistent with objectives contained in Oakland University's Institutional Priorities; and

WHEREAS, the Bachelor of Science in Exercise Science program will produce competent graduates who will demonstrate expertise in exercise and movement science and contribute to the fitness, health and wellness of residents in the state of Michigan; now, therefore, be it

RESOLVED, that the Board of Trustees authorizes the School of Health Sciences to offer a Bachelor of Science in Exercise Science Degree; and, be it further

RESOLVED, that the Senior Vice President for Academic Affairs and Provost will complete annual reviews of the Bachelor of Science in Exercise Science program to evaluate academic quality and fiscal viability to determine whether the program should be continued.

9. Attachments:

A. Proposal for the Bachelor of Science in Exercise Science program.
B. Pro Forma budget for the Bachelor of Science in Exercise Science program

Submitted to the President
on 12/6/18, 2018 by

James P. Lentini, D.M.A.
Senior Vice President for
Academic Affairs and Provost

Recommended on 12/7, 2018
to the Board for approval by

Ora Hirsch Pescovitz, M.D.
President

Oakland University

Proposal for a New Major
11.21.2018

BACHELOR OF SCIENCE IN EXERCISE SCIENCE

Charles R.C. Marks, Director, Exercise Science Program

Kris Thompson, Chair, Department of Human Movement Science

Kevin A. Ball, Dean, School of Health Sciences

Requested Implementation Term: Fall 2019

Approvals

Exercise Science Program – May 14, 2018

School of Health Sciences, Committee on Instruction – July 5, 2018

Department of Human Movement Science – September 4, 2018

School of Health Sciences, Assembly – September 4, 2018

University Committee on Instruction - October 22, 2018

University Senate - November 15, 2018

Proposal for a New Major
Bachelor of Science in Exercise Science Degree
Department of Human Movement Science School of Health Sciences

ABSTRACT
The Exercise Science Program in the Department of Human Movement Science, School of Health Sciences (SHS) has a long history of offering exercise courses, a minor in Exercise Science and a Masters in Exercise Science. An exercise science concentration is an option in the Bachelor of Science in Health Science. This proposal is for a new major, a Bachelor of Science in Exercise Science (BS in EXS) degree, to be offered by the Exercise Science Program (EXS) in the Department of Human Movement Science. The BS in EXS will offer a pre-physical therapy concentration.

The BS in EXS degree program will build on the courses currently offered by EXS, the strength of the faculty, and the interest of students in the field of exercise science. The school is well-positioned to grow and develop this degree program. Given the current number of exercise science courses offered by the EXS program only the addition of one new laboratory course along with the revision of several exercise science courses will be necessary to build the degree program. There are currently 4 full-time faculty in the EXS program. Three additional faculty members are requested over the next 5 years as the number of students enrolled in the junior and senior years grows and the number of EXS credits taken by the students increase. There is adequate space and most of the large equipment needed for the laboratory courses and as the EXS courses are already being offered, there has been adequate classroom space. There will be a need for some large equipment replacement as well as supplies and small equipment for the laboratory and research courses.

Given the interest in exercise science both as a field of study and for preparation to graduate school, this degree program has the potential to continue to draw current as well as new students to the university. The proposed BS in EXS will be a 124 credit degree program that will meet university degree requirements, provide a strong foundation in the sciences and exercise science, and allow the student opportunities for practicum, research, and laboratory experiences. The BS in EXS will prepare graduates for careers and for competitive graduate degree programs.

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RATIONALE

Introduction

The School of Health Sciences (SHS) has four departments including Interdisciplinary Health Sciences (IDH), Human Movement Science (HMS), Clinical and Diagnostic Sciences (CDS), and Public and Environmental Wellness (PEW). These four departments currently offer undergraduate and graduate degrees along with concentrations and minors as seen in Table 1. HMS includes the programs in Physical Therapy (PT) and Exercise Science (EXS). At the present time the EXS program offers a minor in EXS and a Masters of EXS. The Bachelor of Health Science degree has 6 options for concentrations including concentrations in EXS and pre-physical therapy. The Bachelor of Health Science is offered through IDH.

SHS does not currently offer a Bachelor in Exercise Science. This proposal is for a new major, the Bachelor in Exercise Science to be offered in the EXS program in the Department of Human Movement Science. The EXS major and a pre-physical therapy concentration would be offered in the BS in EXS. IDH would continue to offer the BS in Health Sciences with 4 options for concentrations. The BS in EXS will build upon the current course offerings in EXS, strengths of the EXS faculty, student interest and opportunities for growth. The proposed organization for the program offerings in SHS is in Table 2.

TABLE 1 School of Health Sciences Current Organization of Programs

School of Health Sciences Current Organization of Programs					
Department	**Majors**	**Minors**	**Concen-trations**	**Specializations**	**Grad Degree**
Inter-disciplinary Health (IDH)	1.Health Sciences 2. Applied Health Science	1.Nutrition & Health 2.Integrative Holistic Health 3. Community Health Engagement	1.Nutrition & Health 2.Integrative Holistic Medicine 3.Exercise Science 4.Pre-Health Professional 5.Pre-Pharmacy 6.Pre Physical Therapy		
Human Movement Science (HMS)		Exercise Science			1.Masters of Exercise Science 2.Doctor of Physical Therapy 3.Doctor of Science in Physical Therapy
Clinical and Diagnostic Sciences (CDS)	Clinical and Diagnostic Sciences		Pre-Professional	1.Medical Laboratory Science 2.Radiologic Technology 3.Nuclear Medicine Technology 4.Histo-technology	
Public and Environmental Wellness (PEW)	1.Wellness and Health Promotion 2.Environmental Health and Safety	1.Wellness and Health Promotion 2.Environmental Health and Safety		1.Masters of Public Health 2.Masters of Safety Management	

TABLE 2 School of Health Sciences Proposed Organization of Programs

School of Health Sciences Proposed Organization of Programs					
Department	**Majors**	**Minors**	**Concen-trations**	**Specializations**	**Grad Degree**
Inter-disciplinary Health (IDH)	1.Health Sciences 2. Applied Health Science	1.Nutrition & Health 2.Integrative Holistic Health 3. Community Health Engagement	1.Nutrition & Health 2.Integrative Holistic Medicine 3.Pre-Health Professional 4.Pre-Pharmacy		
Human Movement Science (HMS)	**Exercise Science**	Exercise Science	**Pre-Physical Therapy**		1.Masters of Exercise Science 2.Doctor of Physical Therapy 3.Doctor of Science in Physical Therapy
Clinical and Diagnostic Sciences (CDS)	Clinical and Diagnostic Sciences		Pre-Professional	1.Medical Laboratory Science 2.Radiologic Technology 3.Nuclear Medicine Technology 4.Histo-technology	
Public and Environmental Wellness (PEW)	1.Wellness and Health Promotion 2. Environmental Health and Safety	1.Wellness and Health Promotion 2. Environmental Health and Safety		1.Masters of Public Health 2.Masters of Safety Management	

Program Need

The BS in HS, offered by the IDH, offers students the option of six concentrations including the pre-physical therapy and exercise science concentrations. The students in the EXS and pre-physical therapy concentrations are typically preparing for work in the field of exercise science

(exercise physiology, cardiac rehabilitation, fitness/personal training/health) or for graduate studies including masters/doctoral degree in exercise science, kinesiology or human movement science; the doctor of physical therapy (DPT) degree; or other health professional degree programs. While the current concentrations and the minor in EXS have helped to prepare students for these positions and for graduate school, a Bachelor in Exercise Science is the preferred preparation and a better fit to meet the demands of job in the field of exercise science and graduate school requirements, particularly for the DPT program. The present EXS and pre-physical therapy concentrations while providing some core exercise science courses do not provide the depth and breadth typical for a student preparing to apply for graduate programs in exercise science, kinesiology, biomechanics, exercise physiology, and human movement science. Graduates who hold a bachelor's degree in EXS are better prepared to meet the requirements for the American College of Sports Medicines (ACSM) certifications. One of the requirements for an ACSM certification as a certified exercise physiologist is a BS in EXS. In addition, a breadth and depth of exercise science courses is required. The ACSM certifications are important for graduates to obtain as they apply for and progress in positions in the field of exercise science and related fields. SHS offers a MS in EXS. Graduates in the BS in EXS would provide a pool of students and increase enrollment in the MS in EXS. The Bachelor of EXS is the most common degree for students accepted to and enrolling in the doctor of physical therapy (DPT) degree programs.[1] [1](Physical Therapist Centralized Application Service: 2016-2017Applicant Data Report. *2016-2017 Admissions Cycle for the 2017 Entering Class*. *American Physical Therapy Association*. *Dec*. *2018)*

Offering the BS in EXS would improve the organization and delivery of exercise science to students. The pre-physical therapy and exercise concentrations have approximately 400 students. Faculty in the Exercise Science program teach the EXS courses in the concentration, perform the audits for the concentration, and manage the practicums. The advising, tracking and communication with students is challenging for the faculty due to the large numbers of students who are in HS while the faculty are in the HMS department. The ability to identify and advise students is difficult because they do not have to decide they want the concentrations at a defined point as is typical when declaring a major. The proposed BS in EXS aligns the students interested in EXS and health care graduate professional programs like the DPT program in the HMS department with the faculty to advise them.

The proposed BS in EXS will build on the current concentrations in EXS and pre-physical therapy now offered in the BS in Health Science. SHS has a long history of offering EXS courses, a concentration, minor, and a masters degree. Almost all of the EXS courses required to offer the major are currently being offered but students cannot take all of the EXS courses typical for an EXS major in the concentration. A major in EXS would allow students to take more EXS courses providing the necessary depth and breadth of education and experience. A BS in EXS will provide a strong academic background in the foundational courses of exercise physiology, motor control, and biomechanics along with research and practicum experience in exercise prescription and testing, fitness training, and strength and conditioning, Students interested in pursuing positions and graduate degrees in fields that require this academic background and experience will be able to receive the degree that best meets their career goals. Students who are interested in EXS and physical therapy will be able to be recruited and enrolled in their major area of interest as freshman or as transfer students. BS in EXS students provide a strong pool for graduate programs at OU and in SHS. The BS in EXS degree program will also align EXS faculty in the department of Human Movement Science with the major and the courses that they are teaching.

How Program Will Promote the Role and Mission of the University

Mission of Oakland University

Oakland University cultivates the full potential of a diverse and inclusive community. As a public doctoral institution, we impact Michigan and the world through education, research, scholarship, and creative activity.

The BS in EXS supports and is in concert with the mission of Oakland University. Students will be engaged in impactful educational and research experiences in the BS in EXS. Educational opportunities include laboratory experiences, service-learning activities and hands-on skill development. Students will participate in internship and practicum experiences in Michigan that will provide opportunities to interact with and learn from diverse communities. Students will participate in faculty-driven and student engaged research and scholarship. Exercise science faculty currently mentor undergraduate and graduate students and students are presenting locally, regionally and nationally. In addition, students will have the opportunity to participate in leadership and service activities. SHS offers ECLIPSE, a leadership program in which students

in the BS in EXS may participate to develop their leadership skills. Students will also have opportunities to a part of clubs in SHS such as the Pre-PT or the Running Club and to participate in many service and community-engaged activities offered through these clubs.

Program Goals

The new major is designed to meet the following goals:

1. To build upon the core body of knowledge offered in general education in order to develop the skills in critical thinking, problem-solving, and communication that are required in exercise science clinical, community and research settings.
2. To provide students the knowledge, skills, and behaviors in the foundations of exercise science including motor control, exercise physiology, and biomechanics.
3. To offer a distinctive undergraduate curriculum that provides opportunities for practicums, research, integrated labs, and community-engaged service that allow students to apply and utilize the knowledge, skills, and behaviors of exercise science.
4. To prepare students for careers related to human movement science and exercise science and/or for graduate studies.

Comparison to Similar Programs

The proposed BS in EXS is similar to other programs in exercise science that prepare students for careers in fields that require or desire a bachelor's in exercise science in exercise science, kinesiology, movement science, or biomechanics. The BS in EXS also prepares students who want to apply to graduate school for advanced degrees in the discipline or for professional school in medicine, nutrition, physician assistant, physical therapy, or occupational therapy. These BS in EXS programs typically include general education requirements; required courses in the math and sciences; core courses in exercise science/kinesiology/movement science; and cognates, concentrations or electives. A course of study in exercise science will typically include courses or material on exercise physiology, biomechanics, motor control, and human movement. Laboratory or skills courses in assessment, testing, intervention and exercise prescription are also common. Students may be required or encouraged to complete fieldwork, internship, practicum and/or research courses.

The proposed BS in EXS is designed to meet university requirements, to meet the goals of the program, to meet expectations of employers and to prepare students for entrance into competitive graduate programs. The proposed BS in EXS includes foundational courses, laboratory experiences, testing and assessment courses, as well as an expectation for a practicum or research experience. Table 3 compares the proposed OU program to other programs in Michigan.

Distinctive to the proposed OU BS in EXS program is a laboratory experience which will integrate the content in the exercise physiology, motor control and biomechanics courses. This course, EXS 4715 Integrated Laboratory, will be a laboratory experience that will culminate in an integrated case study that will require comprehension of the foundational concepts, analysis and critical thinking. This capstone course will meet the university requirements for writing intensive in the major.

TABLE 3 Comparison of EXS/Kinesiology Programs in Michigan to Proposed BS in EXS

Comparison of Michigan Programs (6.15.2018)				
University	Western Michigan University	Grand Valley State University	Michigan State University	Oakland University
Degree	BS in EXS	BS in EXS with Emphasis-Clinical Exercise Science	BS in Kinesiology	Proposed BS in EXS
General Education/integrative Study and Writing	General Education Courses	General Education Courses	Integrative Study and Writing Courses	General Education Courses
Cognates/Required Courses	Cognates (Bio, Anatomy, Physiology, Chem, Physics, Psych, Healthy Living) 25 – 27 credits	Cognates (Anatomy, Physiology, Stats) 9-10 credits	Required courses (Anatomy, Phys, Math, Human Movement, Chem and lab) 19 credits	Required Courses (Anat, Phys, Chem, Phys, Psych, Math, Research, Stats) 39 credits

University	Western Michigan University	Grand Valley State University	Michigan State University	Oakland University
Major Courses	Health Performance and Health Education (HPHE) 37 credits	EXS Major Courses 36 – 42 Credits	Kinesiology Major and Internship Courses 24 - 27 credits	EXS Major Courses 35 credits
Options/emphasis/elect cognates concentrations/minors or electives	Personal Option Program 20 credits	Emphasis - Clinical Exercise Science 28 Credits	Required to elect cognate (Examples: Ex physiology, health promotion, athletic injury and therapy, cognitive and motor neuroscience) Min of 12 credits	Pre-physical therapy concentration or EXS elective credits and/or minor Minimum of 22 credits
Credits required for degree	122	120	120	124

ACADEMIC UNIT

How Program Supports Goals of the Unit

Mission**:** The School of Health Sciences provides an exceptional environment of collaborative, academic and clinical learning that helps transform students into leaders impacting the health needs of our communities in diverse wellness and health-related practices.

The School of Health Sciences is passionate about providing students with the best science-based health education, high-quality academic preparation, interdisciplinary teaching and excellence in instruction in the classroom and clinical laboratory.

The goals of the BS in EXS support and are in concert with the mission of the School of Health Sciences. The goals of the BS in EXS emphasize collaborative, academic, and clinical learning and will provide students with the sound science-based health education, high-quality academic

preparation, interdisciplinary teaching, and excellence in instruction in the classroom and clinical laboratory.

The foundational model for SHS is in Appendix A.

Staffing Needs

There are currently 4 full-time faculty in the EXS program housed in the Department of Human Movement Science. These full-time faculty have been teaching the current exercise science courses that are a part of the pre-physical therapy concentration and the Exercise Science concentration in the Bachelor of Health Science degree program. The EXS faculty also teach the elective EXS courses and the courses in the Masters of Exercise Science degree program. In addition to the full-time faculty there are two, long-time, special lecturers in the school, faculty in other SHS departments and a number of well-qualified part-time instructors who teach EXS courses.

The proposed Bachelor of EXS will require 3 new full-time faculty. The three new full-time faculty will be hired in years 2, 3, and 4. There will be a requirement for a practicum (EXS 4960) or research experience (EXS 4995) for students in the EXS major. The faculty member in year 2 will be hired to coordinate, arrange and teach the practicum courses. This faculty member will be responsible for maintaining and recruiting additional practicum sites as well as ensuring student readiness and compliance with practicum site requirements. Students are required to have health insurance, CPR/First aid, background checks and vaccinations. The faculty member will prepare the students for the practical experience, coordinate with the practicum site, make periodic site visits, manage any student issues, review the student and course evaluations, grade the final projects and enter the course grades. In year 2 the expectation is that this faculty member will begin the process of ensuring that the practicum sites are available as the practicum experience occurs in year 4 in the EXS plan of study.

The faculty members hired in years 3 and 4 will be hired to teach third and fourth year EXS courses. The number of sections for these courses will increase as the number of students progressing to the third and fourth years grows. The faculty members hired in years 3 and 4 will teach sections of EXS 4030 Assessment and Interventions Laboratory, EXS 4715 Integrated

Laboratory, and EXS 4995 Directed Research. The EXS 4030 Assessment and Interventions Laboratory and EXS 4715 Integrated Laboratory are required courses. EXS 4715 is the writing intensive, capstone major course.

The EXS program does not have any assigned staff. Two staff members will be required to implement the BS in EXS. Both staff members are requested in the first year. The clerical staff member will be responsible for correspondence/communication with practicum sites, full-time and part-time faculty, and prospective, admitted, and enrolled students; maintenance of the practicum site database; part-time, lecturer and student payroll; office procedures related to course and room scheduling, student and graduate assistant hiring, equipment purchase, faculty travel; and support of the program director, program coordinators, and practicum site coordinator. The second staff member will be a laboratory manager. The EXS program has several teaching and research labs with highly specialized equipment and supplies. The EXS laboratory manager will be responsible for managing, order, preparing and setting up all equipment and supplies for all EXS teaching and research labs. The teaching labs will be in constant use with multiple sections of the following laboratory based courses: EXS 2700 Safety and First Aid in Exercise Settings, EXS 4030 Assessment and Interventions Laboratory, EXS 4715 Integrated Laboratory, and EXS 4995 Directed Research among others. The research labs will be used for small group teaching (EXS 4715 Integrated Laboratory) and for research teaching (EXS 4995 Directed Research) as well as for faculty and student research. There will be preparation of equipment/supplies and set up for these courses that will be handled by the laboratory manager.

Faculty Qualifications

The exercise science faculty include full and part-time faculty with expertise in exercise physiology, motor control, and biomechanics as well as in the current required and elective EXS courses. The EXS program currently has 4 full time tenure-track faculty positions.

1. Associate Professor Charles Marks, PhD; Program Director

Dr. Marks has an undergraduate degree from Oakland University and two graduate degrees (MS, PhD) from the University of Michigan. He specializes in exercise physiology with a particular emphasis in cardiovascular, metabolic and body composition issues.

2. Associate Professor Daniel Goble, PhD

Dr. Goble has undergraduate and Masters degrees in Human Kinetics from the University of Windsor in Ontario Canada, as well as a PhD from the University of Michigan. Dr. Goble has wide ranging expertise in human motor control, behavioral neuroscience and biomechanics. His specialties include measurement of proprioception and balance across the lifespan and various disabilities.

3. Assistant Professor Myung Choi, PhD

Dr. Choi earned his Master's degree in Exercise Physiology at Seoul National University, Seoul, South Korea and PhD in Human Bioenergetics program at Ball State University. He specializes in various aspects of exercise physiology including, most recently, the regulation of local and whole body lipid metabolism in sedentary, overweight and obese humans before and after exercise training and nutritional interventions.

4. Associate Professor Tami Hew-Butler, DPM, PhD

Dr. Hew-Butler will be leaving Oakland University at the end of the fall 2018 semester. There will be a search for her replacement.

5. Special Lecturer Mary Anne Mikus, MS

Ms. Mikus has a Bachelor of General Studies degree in business from the University of Michigan and a Masters degree in Exercise Science from Oakland University. She currently serves as the instructor for CPR and First Aid class in the EXS program in addition to teaching several other undergraduate EXS courses.

6. Special Lecturer, Terry Dibble, MS

Mr. Dibble has a Bachelor of Science in Public Administration and a Master of Science in Exercise Science from Oakland University. He is a registered Clinical Exercise Physiologist through the American College of Sports Medicine (ACSM). Mr. Dibble teaches courses in two departments in the School of Health Sciences.

Additional faculty who teach in the School of Health Sciences and who will be assisting in the delivery of EXS courses and/or in the supervision of undergraduate research include:

7. Assistant Professor, Elise Brown, PhD

Dr. Brown has an undergraduate degree in Kinesiology and Health Promotion, a masters degree in Sport Administration, and a PhD in Health Promotion. She has worked in the field as a

personal trainer, health club fitness director, and physical education teacher. She is a faculty in the Department of Public and Environmental Wellness. Dr. Brown teaches courses in fitness and wellness as well as a range of wellness and exercise science activity courses and labs.

Part-time faculty: The EXS program has a number of experienced part-time faculty who teach some of the EXS specialty courses such as the Electrocardiography course.

New faculty hires: The first faculty member who will be hired to teach the practicum courses and to manage the practicum sites will be hired at the Special Instructor rank. Qualifications will include a master degree in exercise science, kinesiology or movement science; experience in clinical, organizational or work settings; knowledge of clinical, organizational and work setting practice requirements; strong organizational and communication skills, and qualifications to teach consistent with course requirements. The qualifications for the two faculty members who will teach the third and fourth year courses will include a doctoral degree in exercise science, kinesiology or movement science; an active research agenda in the discipline; experience and qualifications to teach consistent with course requirements.

Impact on Current Programs

The proposed BS in EXS program will most directly impact the BS in HS program which currently offers the EXS and Pre-Physical Therapy concentrations. The EXS concentration will no longer exist, although students in HS will be able to get a minor in EXS if they wish. The pre-physical therapy concentration will become a part of the BS in EXS program. Currently the BS in HS has approximately 1,200 enrolled students and 6 full-time faculty members. The BS in HS has experienced strong growth over the past several years. Given the estimates of the number of students enrolled in the EXS and pre-physical therapy concentrations it is anticipated that the BS in EXS will have about 300 students over the next one to three years move to the BS in EXS. Currently students in the EXS and pre-physical therapy concentrations are required to take 3 HS core courses: HS 2000 Health in Personal and Occupational Environments, HS 3000 Community and Public Health, and HS 4500 Law, Values and Health Care. The BS in EXS will still require that students take HS 2000 Health in Personal and Occupational Environments. Both HS 3000 Community and Public Health and HS 4500 Law, Values and Health Care may be taken as electives by students in the BS in EXS program. The most direct impact on the BS in HS will be on the advising function and on the reduction of the number of sections required for the HS 4500 course which is the capstone course for the BS in HS degree. The BS in EXS will offer the EXS 4715 course as the

capstone and writing intensive in the major. The BS in HS offers several minors including Community Health Engagement, Integrative Holistic Health, and Nutrition and Health which will be attractive to students in the BS in EXS and which they will be able to choose as minors. Given that there is an expectation that the new BS in EXS degree will attract new students it is an anticipated that there will continue to be heavy demand for HS courses.

The chairs of the departments of Human Movement Science and the Interdisciplinary Health Sciences, along with the program directors for Physical Therapy and Exercise Science will work closely with the SHS Director of Academic Advising and Student Services to ensure students receive information on the new BS in EXS program and are advised appropriately during this transition. Students coming in under earlier catalogs who are in the EXS and pre-physical therapy concentrations will be able to complete the concentrations as all of the courses will still be available or appropriate waivers/substitutions will be offered. SHS faculty engagement, advising, and mentoring will be more appropriately distributed with the new BS in EXS. This will help to recruit students and to ensure student success, retention, and graduation.

PROGRAM PLAN

Admissions Requirements

The BS in EXS will follow the university undergraduate admission policies and expectations for admission or transfer to the university as outlined in the undergraduate catalog. Students can be directly admitted to or transfer to, upon meeting university requirements, the BS in EXS.

Degree Requirements

Student requirements for the BS in EXS degree:

1. Meet the university general education requirements.
2. Complete the university diversity requirement.
3. Complete the required courses
4. Complete the exercise major courses
5. Choose the pre-PT concentration, an HS concentration or minor, or choose sufficient approved electives to meet the 124 credit requirement for the degree.

TABLE 4 Summary of Credits

Proposed BS in Exercise Science Summary of Credits to Meet Degree Requirements		
Categories	**EXS Major**	**EXS Major with Pre–PT Concentration**
A.General Education Course Credits	24-28 (given overlap with required and major courses; includes meeting the university diversity requirement.	24-28 (given overlap with required and major courses; includes meeting the university diversity requirement.)
B.Required Course Credits	39	39
C.EXS Major Course Credits	35	35
D.Elective Credits	Minimum of 22 credits to total 124 credits (depending on gen ed credits. Possibility for minor or additional EXS credits in area of interest (i.e. personal training, health/fitness, cardiac rehab, additional EXS/research)	Min of 1 elective credit to total 124 credits (depending on gen ed credits)
E. Concentration Credits	0	**21**
Total	**124 credits**	**124 credits**

TABLE 5 Overview of Curriculum

Proposed BS in Exercise Science			
A.General Education Requirements		**Up to 56 Credits**	
Requirement	Course	Credits covered in required courses/major	Electives
Writing Foundations (2.0 required)	WRT 1060 (pre-req WRT 1050 min 2.0 or placement by ACT score no credit for WRT 1050. Credits not counted)		4
Writing Intensive Gen Ed			4
Formal Reasoning	Satisfied by required course STA 2220	4	
Arts			4
Foreign Lang & Culture			4
Global Perspective			4
Literature			4
Nat Sci & Technology	Satisfied by required courses (BIO, CHM or PHY)	4	
Social Science	Satisfied by req (PSY)	4	
Western Civ			4
Knowledge App	Satisfied by course (PHY II, PSY 2250	4	
Diversity		4 (with another gen ed)	
Writing Intensive in Major	Satisfied by EXS 4715 Integrated Lab	3	
Capstone in Major	Satisfied by EXS 4715 Integrated Lab	3	
Up to 56 Credits			(28 credits not double counted)

B.Required Courses	**Course**	**39 credits**	**Comments**
Bio 1200	Bio 1	4	
Bio 2100	Human Anatomy (pre-req Bio 1)	4	
Bio 2101 or Bio 3621	Human Anatomy or Anatomy Physiology Lab	1	
Bio 2600	Human Physiology	4	
Math 1441	Pre-Calculus	4	
Psychology 1000	Intro Psychology	4	
Psychology 2500	Intro to Research Design	4	(or HS 2250 research design course)
Chemistry 1	CHM 1440 & CHM lab 1470	5 (4 & 1)	
Intro Statistics	STA 2220	4	
Physics 1	PHY 1010 & PHY 1100	5 (4 & 1)	
C.EXS Major Courses	**Course**	**35 credits**	**Comment**
HS 2000	Health in Personal & Occupational Environments	4	
EXS 1000 or EXS 1100	Strength & Conditioning or Cardiovascular Fitness Training	2	
EXS 2200	Introduction to EXS	2	
EXS 2410	Nutrition for Sport, Exercise and Health	3	Current course EXS 2400 (Nutrition, Weight Control and Exercise (4 cr.) will be replaced with EXS 2410.
EXS 2700	Safety and First Aid in Exercise Settings	2	
EXS 3010	Exercise Physiology	3	

C.EXS Major Courses	**Course**	**35 credits**	**Comment**
EXS 3020	Biomechanics	3 (now Human Motion Analysis -4 credits)	Change to Biomechanic eliminate as writing intensive/capstone
EXS 3030	Motor Control	3	Offered and required in EXS concentration in 2018-2019
EXS 4715	Integrated Laboratory in Exercise Science	3	Offered in 2018-2019
EXS 4960 or EXS 4995	EXS 4960 Practicum or EXS 4995 Directed Research course	3	EXS 4960 Practicum will be reduced from 5 to 3 credits. Required hours reduced.
EXS 4030	Assessment and Interventions Laboratory	3	New course.Assessment and interventions in prep for practicum/research
EXS electives	3000/4000 level electives	4	
D.Electives		Min of 22 credits	
E.Pre-PT concentration	**Course**	**Min of 21 credits**	
CDS 2100	Medical Terminology	1	
CDS 4010	Pathology	4	
PT 3020	Physical Therapy as a Profession	2	
Psych 2250 (second Psych course)	Intro to Lifespan Developmental Psychology	4	
Chemistry 2	Chem 1450 & 1480 Lab	5 (4 & 1)	
Physics 2	PHY 1020 & 1110 Lab	5 (4 & 1)	
Approved electives		Min of 1 elective credits	
		124 credits to graduate	

Four year plans of study for the BS in Exercise are in Appendix B. New course syllabi are in Appendix C.

Proposed Minor in Exercise Science Requirements

Currently there is a 22 credit minor in Exercise Science offered by the EXS program. This proposal modifies the minor in Exercise Science by reducing the number of credits to 20, adding EXS 2200 Introduction to EXS and adding the EXS 3030 Motor Control class. A 20-credit minor in Exercise Science is available to students in any degree program. The minor includes the core courses of exercise physiology, biomechanics, and motor control.

TABLE 6 Proposed Minor in Exercise Science Courses and Credits

Proposed Minor in Exercise Science Course Requirements		
Rubric	**Course**	**Credits**
EXS 1000 or EXS 1100	Strength&Conditioning or Cardiovascular Training	2
EXS 2200	Introduction to EXS	2
EXS 2410	Nutrition for Sport, Exercise and Health	3
EXS 3010	Exercise Physiology	3
EXS 3020	Biomechanics	3
EXS 3030	Motor Control	3
Approved EXS electives	Approved EXS electives	4
		20 **Total credits**

Approved elective credits (if not taken as part of the major/minor)

- EXS 1000 - Strength and Conditioning (2)
- EXS 1100 - Cardiovascular Fitness (2)
- EXS 2000 - Group Exercise Instruction I (2)
- EXS 2100 - Group Exercise Instruction II (2)
- EXS 2700 - Safety and First Aid in Exercise Settings (2)
- EXS 4100 - Introduction to Personal Training (2)
- EXS 4110 - Advanced Personal Training (2)
- EXS 4200 - Physical Activity and Aging (2)

- EXS 4210 - Children and Exercise (2)
- EXS 4300 - Human Performance Enhancement (2)
- EXS 4310 - Environment and Human Performance (2)
- EXS 4400 - Obesity and Physical Activity (2)
- EXS 4500 - Healthy Lifestyle Choices (2)
- EXS 4600 - Health and Disease (2)
- EXS 4620 - Clinical Biomechanics (2)
- EXS 4630 - Basic Athletic Training (2)
- EXS 4640 - Exercise Electrocardiography (2)
- EXS 4700 - Corporate and Worksite Wellness Programs (2)
- EXS 4800 - Exercise Endocrinology (2)
- EXS 4810 - Physical Activity Epidemiology (2)
- EXS 4900 - Special Topics (1 to 4)
- EXS 4995 – Independent Study (1 to 4)

F. See Appendix D for Comparison of BS in HS (with EXS and Pre-PT concentrations) and proposed BS in EXS and Current EXS Undergraduate Course Descriptions

Support of Other Departments and Academic Units

SHS chairs have been supportive of the development of the BS in EXS.

Source of Students

Students currently in the BS in Health Science pre-physical therapy and exercise science concentrations or minor will be a source of students. There is also an expectation that new students interested in exercise science will be attracted to and enroll at Oakland University. Oakland University prepares students who attend DPT programs at public universities in Michigan and public and private universities nationally. Of the students who were accepted into DPT programs in 2016-17, Oakland University was third among colleges in Michigan as the primary institution where students earned a Bachelor degree.[1] A major in exercise science or kinesiology are by far the most common majors for applicants accepted in to DPT programs according to the most recent report PTCAS Applicant Data Report.[1] Offering a BS in EXS will provide a sought after major to students preparing for graduate school. A survey of 71 current DPT students was conducted regarding degree preparation for application to DPT programs. The majority of students indicated that 1) the preferred preparation is a degree that has the pre-requisite courses for application to the DPT and 2) that the degree that best prepares students for the DPT program is a BS in EXS/Kinesiology/Movement Science. Of the DPT students in the

survey who did not attend Oakland over 95% had earned a degree a BS degree in EXS, Kinesiology or Movement Science and many indicated that they would have considered Oakland if Oakland had a BS in EXS degree.

[1](Physical Therapist Centralized Application Service: 2016-2017Applicant Data Report. *2016-2017 Admissions Cycle for the 2017 Entering Class. American Physical Therapy Association. Dec. 2018)*

Recruiting

1) There are a large number of students who are currently in the EXS and pre-physical therapy concentration that we anticipate will be interested in pursuing the BS in EXS degree. Students currently at Oakland who are taking the EXS concentration or minor will be well positioned to transfer from the BS in Health Science to the BS in EXS degree. For students already in the EXS concentration or minor the requirement for the 2 credit Intro to EXS course would be waived and another EXS course would be substituted. Transfer students will also be a viable source of students as many students who are interested in a BS degree in order to apply to graduate school or pursue a career in a health science field transfer to SHS.

2) Current methods of recruiting to new students to the School of Health Sciences for the BS in EXS degree will continue. We will work with undergraduate admissions to promote the new BS in EXS degree program. Current methods of recruiting include participating in OU events such as Go for the Gold, Human Health Day, Honors College meetings and transfer student meetings and orientations.

3) The EXS program director, director of advising and chair of the HMS program and representatives from the Registrar's Office have met with and will continue to meet with community college representatives to discuss and work out transfer agreements.

4) Plans for recruitment include mailings and electronic communication with exercise science and physical therapy internship sites. In addition, the HMS department will share the information at professional meetings, at DPT informational meetings for prospective students, and with the pre-PT club and clubs on campus.

Expected Enrollment

There are approximately 400 current students in the EXS concentration or the pre-physical therapy concentration that might be expected to move from the BS in HS and to enroll in the BS in EXS degree program over the next 1 – 4 years. In addition, there are students in the minor who will enroll in the courses required for the minor.

There is an expectation that there will be new students who will be interested in the BS in EXS program. There continues to be strong interest and employment growth in the healthcare fields. Students are interested in degrees that will prepare them to apply to graduate programs including for example medicine, physician assistant, and physical therapy as well as jobs and careers in exercise science and sports medicine. The projection is for 28 new students per year. New students will begin being admitted to and enrolling in the BS in EXS once the major is approved.

Academic Advising

The SHS director of academic advising and SHS advisors advise the SHS undergraduate students. The staff works in collaboration with the students to help students achieve their overall academic, graduation, and career goals. The director and staff will work closely with the Exercise Science program director and the chair of Human Movement Science to advise new BS in EXS students and students who wish to transfer into the proposed program.

NEEDS AND COSTS OF THE PROGRAM

New and Source of New Resources Needed for the Program

The EXS program has resources including faculty, equipment and supplies based on the current concentration, minor and Masters offerings. In addition, in the past two years the program has benefited from the addition of major equipment for teaching and research with new hires. For example, Dean of the School of Health Sciences, Dr. Ball was able to arrange for motion capture equipment and Dr. Goble brought the BTrackS.. Space has been prepared on the first floor for labs which will support teaching and research in SHS, including that of the EXS program.

Budget and Revenue -Program

A pro forma budget for the BS in EXS program can be found in Appendix E.

Tuition revenue projections are based on the number of EXS credits in the proposed plan of study for each year (freshman, sophomore, junior and senior) in the degree program. The number of credits times the number of students in each year (128 for freshman, 100 each in sophomore, junior, and senior years) equals the tuition revenue for each year of the pro forma budget. Revenue increases slightly each year as the 28 new students who enroll in Year 1 begin to take more EXS credits in Years 3 and 4 (which would be the student's junior and senior years). Tuition revenue for 128 EXS students reaches a steady state in years 4 and 5.

Expenses include salaries and operating expenses. Salaries include full-time faculty, part-time faculty and clerical technical. Full-time faculty salary in year reflects the current 4 full-time EXS faculty. Faculty member is added each year in years 2, 3, and 4. The part-time faculty budget reflects the current part-time faculty budget. The budget for one clerical staff member and a laboratory manager are in the clerical-technical line. Graduate Assistants are budgeted for each year with 3 the first year, 6 the second year and 9 in the third, fourth and fifth years. Graduate Assistants will be recruited from the Master's in Exercise Science program. Graduate assistants will work with faculty to teach the laboratory and research courses. As these are smaller labs with hands on practice there are multiple sections of the courses which will need to offered. Graduate assistants are needed to assist with lab instruction, lab demonstrations, grading, open labs, and research support in the undergraduate research courses.

Operating expenses include supplies and services, equipment, maintenance, travel, recruitment and library. Travel, excludes faculty travel, and is for administrative travel, travel to practicum sites and travel for recruitment. The recruitment line item for year one includes support for mailings, materials and 2 events to publicize the new BS in EXS program. In year two there is money for mailings, materials and 1 event. The budget for years 3, 4, and 5 is for materials and mailings only. Operating expenses for supplies and services, equipment, maintenance, and the library are described below.

Equipment, Maintenance and Supplies and Services Needs

A list of equipment that is used by the EXS program is in Appendix G. The program has most of the large pieces of equipment needed for the laboratory courses and activities although some of the equipment needs to be replaced or updated. The EXS program has not had a dedicated equipment budget for the purchase and maintenance of equipment. One-time funding has been used for equipment purchases. The pro forma budget includes some new purchases, upgrades and replacement costs for equipment. A consistent equipment line item will allow the program to put in place a plan to regularly upgrade and replace equipment before there is an emergency and there are no funds to handle the emergency. Likewise maintenance contracts for the large and expensive equipment will prevent higher costs if equipment needs to be replaced or repaired. Equipment and supplies and services are outlined in Table 7.

TABLE 7 Equipment and Supply Needs

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Equipment Budget	$77,4000.00	$54,300.00	$54,300.00	$23,000.00	$23,000.00
Equipment	Replace- metabolic cart A 10-heart rate monitors 2 –Electrocardiographs 5 -ipads	Replace- metabolic cart B Upgrade and replace equipment.	New – Metabolic Cart C Upgrade and replace equipment	Replace treadmill A Upgrade and replace equipment	Replace treadmill B Upgrade and replace equipment
Equipment Maintenance Budget	$11,800.00	$14,300.00	$16,800.00	$16,800.00	$16,800.00
Maintenance Contracts	Oxycon, 1 -Metabolic Cart, Dexa	Oxycon, 2 - Metabolic Carts, Dexa	Oxycon, 3 - Metabolic Carts, Dexa	Oxycon, 3 - Metabolic Carts, Dexa	Oxycon, 3 - Metabolic Carts, Dexa
Supply and Services Budget	$23,040.00	$23,040.00	$23,040.00	$23,040.00	$23,040.00
Supplies and Services	Disposable supplies for labs and safety first aid courses (alcohol wipes, EKG pads, first aid certification cards, etc.) (Estimate based on current S and S budget and new students in lab courses). General department supplies/services. (paper, copying, office supplies)				

Library Holdings

The library report states, "The University Libraries hold a strong collection of exercise science resources due to the exiting M.S. in exercise science graduate program." There is a budget request from the library to support the purchase of additional books and anticipated annual inflationary cost increases for journals and research databases (historically averaging eight percent or more per year), A full report on the library holdings and a proposed budget for the library to support the BS in EXS are included in Appendix I.

Classroom, Laboratory, Space Needs

The EXS program holds academic classes in general university classrooms and laboratory classes in SHS shared and EXS program dedicated laboratories. All of the EXS lecture courses, except for one lecture course, EXS 2200 Introduction to Exercise Science, are already being scheduled and offered. There is currently sufficient space in those courses for the current and new students that are anticipated in the first 5 years.

The EXS program has been offering the EXS laboratory courses and the activities that require a lab space in the Human Health Building (HHB). There is a dedicated exercise physiology lab (5050 HHB) on the fifth floor for exercise physiology research and teaching. There is an adjacent lab (5045 HHB) which has been shared by EXS and the Wellness Health Promotion (WHP) program. These two adjacent labs will be needed for the exercise physiology, exercise assessment and intervention components of the EXS 4715 Integrated Laboratory and the EXS 4030 Assessment and Interventions Laboratory. The first floor labs, 1051 HHB Strength and Fitness Assessment Lab and 1052 Functional Biomechanics Lab, will be needed for teaching the strength, fitness, human motion analysis, motor control and biomechanics lab components of EXS 4030 and EXS 4715 as well as the EXS 4995 Directed Research course. In addition this space will be used by SHS students and faculty for their on-going research studies. The EXS 2700 Safety and First Aid course has been held in 4042 HHB (WHP Lab) and the course will continue to be held in that room. This space is a must for the BS in EXS student and faculty teaching and research. Given that much of this space is shared among SHS programs there will be a demand for the space. The space will need to be carefully scheduled and maintained in order to be adequate. In addition, there will be set-up and prep time required since the space is shared.

IMPLEMENTATION PLAN AND TIME LINE

Reviewing Body	**Planned Timeframe to Submit**
Exercise Science Program	May 2018
School of Health Science Committee on Instruction	July 2018
Department of Human Movement Science	September 2018
School of Health Sciences Assembly	September 2018
University Committee on Undergraduate Instruction	October 2018
OU Senate	January 2019
OU Board of Trustees	March 2019
Michigan Association of State Universities	April 2019
Implementation	
Emails to current students in the EXS concentration re: program transfer	Spring 2019
Information for new and undecided SHS students re: BS in EXS	Spring 2019
Freshman Admissions	Fall 2019
Accept Program Transfers	Fall 2019

PROGRAM DELIVERY METHOD

The program will be offered in person, partially on-line. The BS in EXS will not be offered as an entirely on-line program.

ASSESSMENT OF STUDENT LEARNING

The BS in EXS assessment plan relating the OU Mission, Exercise Science program goals, student learning outcomes and methods of assessment are described in the table below. The individuals responsible for the assessment activities and the procedures for using assessment results to improve the program are also included. The two tools for methods of assessment, the EXS 4960 Practicum Evaluation Form and the EXS 4715 Integrated Laboratory Assessment Tool, follow.

Bachelor of Science in Exercise Science Assessment Plan

OU Mission	**EXS Goals**	**Learning Objectives**	**Assessment Methods**	**Responsible Individual**	**Follow-up Procedure**
Oakland University cultivates the full potential of a diverse and inclusive community.	To prepare students for careers related to human movement science and exercise science and/or for graduate studies	Students demonstrate preparation for a career or for graduate study.	Career services graduate survey reports on student employment or enrollment in graduate school.	Exercise Science Assessment Rep. and Program Director.	1. Assessment permanent part of Exercise Science Faculty meetings.
As a public doctoral institution, we impact Michigan and the world through education…	To provide students the knowledge, skills, and behaviors in the foundations of exercise science including motor control, exercise physiology, and biomechanics.	Each student will demonstrate ability to apply the core knowledge of exercise science by scoring at least 5 (out of 7) in every category of the EXS 4715 Integrated Laboratory Assessment Tool.	Faculty Instructor for EXS 4715. EXS 4715 Assessment Tool.	Faculty instructor provides copies of the Assessment Tool to the Assessment Rep. Assessment Rep does annual summaries.	**2**. Analyses reported and discussed at most recent faculty meeting with Department Chair **3**. Faculty will identify needed actions and prioritize. **4**. In order of priority, faculty will identify possible plans of action and identify someone to follow-up **5**. Discuss plan of action **6**. Seek appropriate level of approval for action. If not approved return to 5. **7**. Implement plan **8**. Plan becomes part of the normal assessment process.
	To offer a distinctive undergraduate curriculum that provides opportunities for internships, research, integrated labs, and community-engaged service that allow students to apply and utilize the knowledge, skills, and behaviors of exercise science.	Students will demonstrate satisfactory clinical knowledge by scoring at least 4 (out of 5) in every category of the Practicum Evaluation.	Practicum Site Supervisor. Practicum Evaluation Tool.	Practicum site sends copy to Program Director or practicum instructor of record. Assessment Rep. then reviews & does annual summaries	
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… research, scholarship, and creative activity. Wherever possible, EXS students are involved in research projects.	To develop the skills in critical thinking, problem - solving, and communication that are required in exercise science clinical, community and research settings.	Students will demonstrate participation in research including participation in EXS 4995 Directed Research	Faculty will track the number of Students participating in research, presenting at conferences and preparing manuscripts for publication.	Numbers are to be given annually to the Assessment Rep. Assessment Rep does annual summary.	

EXS 4960 Practicum Evaluation

This form is to be Completed by the Practicum Site Supervisor at the End of the Practicum and Submitted Directly to:

Charles R. C. Marks, Ph.D.
DIRECTOR, EXERCISE SCIENCE PROGRAM
SCHOOL OF HEALTH SCIENCES
OAKLAND UNIVERSITY
ROCHESTER, MICHIGAN 48309-4401

EVALUATION FORM

SUPERVISOR'S EVALUATION OF STUDENT PRACTICUM PERFORMANCE

Name of Student_____

Program Director ____**Dr. Charles RC Marks**_____

Practicum Site_____

Supervisor Completing Evaluation_____

Report Period_____ to _____

MO/DAY/YR MO/DAY/YR

Please evaluate the student according to the following categories. Space is also provided for written comments. Please cite specific examples that might clarify excellent or poor performance. These comments will help us in evaluating our program. Score of 1 is poor, 3 acceptable, 5 excellent, NA not applicable.

**** Circle the Appropriate Number****

KNOWLEDGE OF FIELD

1. **Knowledge of Basic Sciences** (Integrates prior knowledge of basic science concepts and principles in a manner that is logical and consistent with sound professional judgement).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

2. **Exercise Knowledge** (Demonstrates prerequisite exercise skills required for this practicum).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

3. **Ability in Evaluating Client Exercise Program** (Prescribes proper course or action consistent with medical orders or with client fitness level).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

4. **Technical Ability** (Possesses and demonstrates proficiency in manual skills necessary to perform all procedures required for this practicum).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

PERSONAL QUALITIES

1. **Acceptance of Administrative Responsibilities** (Maintains legible records, performs other routine administrative duties in a timely fashion).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

2. **Relations with Clients** (Maintains professional rapport, protects confidence).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

3. **Relations with Practicum Site Staff** (Works efficiently with staff and uses their skills appropriately).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

4. **Professional Attitude and Demeanor** (Gains and holds respect of clients and colleagues alike - maintains positive attitude towards both learning new material and the delivery of services).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

5. **Response to Constructive Criticism** (Willingly accepts and applies corrective comments, admits mistakes and learns from them, doesn't repeat mistakes).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

6. **Leadership Capabilities** (Willingly accepts responsibility for client care).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

7. **Grooming and Appearance** (Conforms with dress code, looks and presents him/herself in a professional manner at all times).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

8. **Communication Skills** (Able to effectively communicate with clients/patients and staff verbally and in writing).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

9. **Ethical Standards** (Applies professional ethical standards in relation to clients/patients, staff, and duties).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

OTHER

1. **Progress in the Program** (Progressed satisfactorily at a rate consistent with others at his/her level).

1	2	3	4	5	N/A

Poor **Excellent**

Comments_____

OVERALL ASSESSMENT (Taking Everything Into Account)

1	2	3	4	5	N/A

OVERALL COMMENTS (Please provide any other information that may not have been specifically asked for but is helpful in evaluating this student or aiding us in evaluating our program to improve

(Student: Signature/Date) (Supervisor: Signature/Date)

EXS 4715 Integrated Laboratory Course
Undergraduate Program Assessment Tool

Course Instructor: EXS Faculty; ___ EXS Part-Time faculty; ___ Other HS; ___ Other
Rating scale is: 1 – 7 or NA (not applicable). Where 1 = Poor, 4 = Acceptable, 7 = Outstanding.
Specific comments that can be helpful in evaluating and to improve our program are especially appreciated.

Student Learning Outcomes The student will demonstrate:	Rating	Comments
Understanding of biomechanics		
Understanding of nutrition		
Understanding of exercise physiology		
Understanding of motor control		
Ability to integrate the above core courses		
Understanding of ethical issues regarding research in general and specifically to use of humans as participants in research		
Ability to find, critically analyze, and synthesize appropriate research literature.		
Understanding of research design and application of appropriate statistics		
Ability to collect, analyze, and interpret data.		
Ability to integrate the study results and the research literature		
Ability to convey understanding of research in writing and verbal communications		
Ability for conducting appropriate safety and hygienic laboratory procedures		

EXPECTED CAREER OPTIONS FOR GRADUATES

Expected options for graduates with a BS in EXS include careers in healthcare, health promotion and fitness, cardiac rehabilitation, corporate wellness, or education. The graduate school options for the graduates with a BS in EXS include pursuing a masters in exercise science which is offered here at Oakland University. Other options include graduate programs in biomechanics, exercise physiology, kinesiology or movement science. Graduate professional program options include physical therapy, physician assistant, or medicine for example. A BS in EXS provides a path for careers as an exercise scientist, biomechanist, cardiac rehab specialist, physical therapist, or physician assistant in addition to other healthcare careers. According to the Bureau of Labor Statistics the healthcare industry will be adding about 4 million new jobs through 2026.[2]

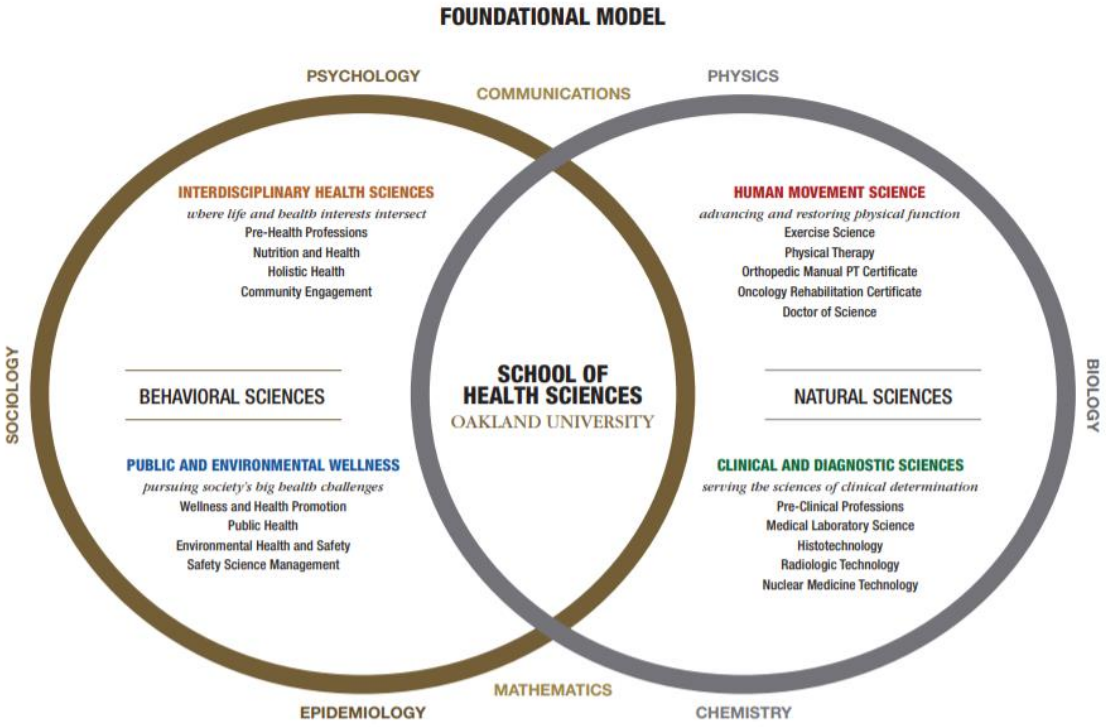
[2](Modern Healthcare. Healthcare industry to create 4 million jobs. Alex Kacik. October 17, 2017. Accessed 6.16.2018 at www.modernhealthcare.com/article/20171027/NEWS/171029879)

VIIII. APPENDICES

APPENDIX A

SCHOOL OF HEALTH SCIENCES

FOUNDATIONAL MODEL



Built upon the foundations of the natural and behavioral sciences, the School of Health Sciences transforms students into leaders, connects theory to best practices, and impacts the needs of communities in purpose *for Health*

APPENDIX B

Sample 4 year plan of study for BS in EXS

BS in EXS (for Students placed into WRT 1050 & MTH 1441)			
Year	Fall	Winter	Summer
Freshman	WRT 1050 Comp 1 (4) HS 2000 Health In Per & Occ (4) Art Gen Ed (4) EXS 2200 Introduction to EXS (2) EXS 1000 Strength Training or EXS 1100 Cardiovascular Fitness Training(2) TOTAL CREDITS (16)	BIO 1200 Biology I (4) WRT 1060 II (4) MTH 1441 Pre-calculus (4) Foreign Language Gen Ed (4) TOTAL CREDITS (16)	
Sophomore	BIO 2100 Human Anatomy (4) BIO 2101 Anatomy Lab (1) PSY 1000 Intro Psychology (4) EXS 2410 Nutrition for Exercise, Sport and Health (3)** Western Civ Gen Ed (4) TOTAL CREDITS (16)	BIO 2600 Human Physiology (4) PSY 2500 Research Design (4) STA 2220 Intro to Stats (4) EXS 2700 Safety & First Aid (2) EXS elective (2) TOTAL CREDITS (16)	
Junior	CHM 1440 &1570 Gen Chem & Lab (5) Lit Gen Ed (4) EXS 3010 Ex Physiology (3) EXS 4030 Assessment & Interventions* TOTAL CREDITS (15)	Global Perspective Gen Ed (4) EXS 3030 Motor Control (3) Approved elective credits (9) TOTAL CREDITS (16)	
Senior	PHY 1010 &1100 Gen Physics I and Lab (5) EXS 3020 Biomechanics** (3) EXS 4715 Integrated Lab (3) Approved electives (6) TOTAL CREDITS (17)	Writing intensive gen ed (4) EXS 4960 Practicum** or EXS 4995 Directed Research** (3) EXS elective (2) Approved electives (7) TOTAL CREDITS (16)	*new course ** revised course
	Approved electives minimum of 8 credits at 3000-4000 (use of electives may allow for minors in other programs or concentrations developed in EXS)	TOTAL CREDITS FOR DEGREE 124 (WRT 1050 is not counted towards degree. Presumes the gen ed courses selected meet diversity requirement.	

Sample 4 year Plan of Study BS in EXS (Pre-PT Concentration)

BS in EXS (Pre-PT Concentration) For Students placed into WRT 1050 & MTH 0662			
Year	Fall	Winter	Summer
Freshman	WRT 1050 Comp 1 (4) HS 2000 Health In Per & Occ (4) EXS 2200 Introduction to EXS (2) EXS 1000 or 1100 (2) Art Gen Ed (4) TOTAL CREDITS (16)	BIO 1200 Biology I (4) WRT 1060 II (4) MTH 1441 Precalc (4) Foreign Language Gen Ed (4) TOTAL CREDITS (16)	
Sophomore	BIO 2100 Human Anatomy (4) BIO 2101 Anatomy Lab (1) PSY 1000 Intro Psychology (4) Western Civ Gen Ed (4) EXS 2410 Nutrition for Exercise, Sport and Health (3)** TOTAL CREDITS (16)	BIO 2600 Human Physiology (4) PSY 2500 Research Design (4) STA 2220 Intro to Stats (4) Global Perspective Gen Ed (4) MSL 2100 Med Term (1) TOTAL CREDITS (17)	
Junior	CHM 1440 &1570 Gen Chem & Lab (5) PSY 2250 Developmental Psych (4) Lit Gen Ed (4) EXS 3010 Ex Physiology (3) TOTAL CREDITS (16)	CHM 1450 & 1480 Gen Chem II & Lab (5) EXS 3030 Motor Control (3) EXS 2700 First Aid & CPR (2) PT 3020 PT as a Profession (2) EXS 4030 Assessment & Interventions* TOTAL CREDITS (15)	
Senior	PHY 1010 &1100 Gen Physics I and Lab (5) EXS 3020 Biomechanics (3)** EXS 4715 Integrated Lab (3) Writing Intensive gen ed (4) Approved elective (1) TOTAL CREDITS (16)	PHY 1020 &1110 Physic II 1020 &1110 (5) HS 4000 Pathology (4) EXS 4960 Practicum** or EXS 4995 Directed Research** (3) EXS Electives (4) TOTAL CREDITS (16)	*new course ** revised course
	Approved electives credits at 3000-4000.	TOTAL CREDITS FOR DEGREE 124 (WRT 1050 not counted and diversity requirement is met with one of the gen ed requirements)	

APPENDIX C
NEW AND REVISED COURE SYLLABI

Exercise Science Program
Department of Human Movement Science (Revised Course)
School of Health Sciences
Oakland University

Course: EXS 2410 – Nutrition for Exercise, Sport and Health
CRN:
Course Credits: 3 Credits
Semester/Year: Fall, 2019
Location/Time: On-line
Instructor: Mary Anne Mikus, M.S.
Office Hours: By appointment
Office: 3135 HHB
Email: mikus@oakland.edu

Course Description
This course will blend nutrition and exercise science with practical everyday information to give a clear understanding of how nutrition affects sports, exercise and your overall health.

Course Type: Fully on-line

Course Objectives
At the conclusion of the course the student will demonstrate an understanding of the following:

- ✓ The role of lifestyle in disease prevention
- ✓ Disease process related to lifestyle
- ✓ The mechanism of change
- ✓ Basic nutrition
- ✓ The psychology of change
- ✓ The role of nutrition in exercise and sport
- ✓ Population-based nutrition considerations for nutrition and sport
- ✓ The importance of hydration and electrolyte balance
- ✓ Nutrition for Aerobic Endurance
- ✓ Nutrition for Resistance Training
- ✓ Energy systems used during exercise
- ✓ The energy value of food and of physical activity
- ✓ Evaluation of body composition
- ✓ The nature and dangers of obesity
- ✓ Weight control mechanisms and methods

- ✓ Behavior modification – eating and exercise

Course Procedures

This course is fully on-line class. On-line classes require that you are disciplined and self-motivated. If you are under the impression that an on-line class is an "easy way out"….. wrong!!! My experience with on-line classes is that it actually is more work for the student AND the instructor. There are many benefits to on-line classes. It may sound funny to say this about an on-line class but **being present and engaged is imperative to success in this class**. An on-line class of this type will be as good as how engaged all of the students are. So let's make this an awesome class!!

Book
Nutrition for Sport, Exercise and Health, Spano, Marie A., Kruskall, Laura J., Thomas, Travis D. Human Kinetics, 1st Edition, ISBN 978-1-4504-1487-6

Grading
Evaluation of your work will be as follows:

- ✓ Weekly Quizzes – 200 points
- ✓ Learn Smart Study Modules (reading) – 100 points
- ✓ Assignments – 480 points
- ✓ Course Exam – 220 points

Total Points - 1000

See "Rules for the Road – EXS 2410" for more explicit information regarding your work.
See "Academic Conduct Policy" for information regarding expectations regarding your work.

Grading Scale

Percentage	Honor Points	Grade
94% - 100%	4.0	A
88% - 93.99%	3.7	A-
82% - 87.99%	3.3	B+
78% - 81.99%	3.0	B
74% - 77.99%	2.7	B-
71% - 73.99%	2.3	C+
68% - 70.99%	2.0	C
64% - 67.99%	1.7	C-
61% - 63.99%	1.3	D+
60% - 60.99%	1.0	D
59.99% or below	0.0	F

USING MOODLE AND OTHER TECHNOLOGIES:

Technology Back-up Plan

- In the event that your computer crashes or internet goes down, it is essential to have a "backup plan" in place where you are able to log in using a different computer or travel another location that has working internet.
- Any files you intend to use for your course should be saved to a cloud solution (Google Drive, Dropbox, etc.) and not to a local hard drive, USB stick or external disk. Saving files this way guarantees your files are not dependent on computer hardware that could fail.

Technology Help

- For help using Moodle, use the Get Help link at the top of the Moodle page (moodle.oakland.edu).
- For access to technology and in-person assistance, call or visit the Student Technology Center (Link to Student Technology Center: https://www.oakland.edu/stc/).
- For general technology assistance, consult the OU Help Desk (Link to Help Desk: https://www.oakland.edu/helpdesk/).

Respect Rules of Netiquette

a. Respect your peers and their privacy.
b. Use constructive criticism.
c. Refrain from engaging in inflammatory comments.
d.

CLASSROOM AND UNIVERSITY POLICIES:

Classroom Behavior

1. Academic conduct policy. All members of the academic community at Oakland University are expected to practice and uphold standards of academic integrity and honesty. Academic integrity means representing oneself and one's work honestly. Misrepresentation is cheating since it means students are claiming credit for ideas or work not actually theirs and are thereby seeking a grade that is not actually earned. Following are some examples of academic dishonesty:
   a. **Cheating.** This includes using materials such as books and/or notes when not authorized by the instructor, copying from someone else's paper, helping someone else copy work, substituting another's work as one's own, theft of exam copies, falsifying data or submitting data not based on the student's own work on assignments or lab reports, or other forms of misconduct on exams.
   b. **Plagiarizing the work of others.** Plagiarism is using someone else's work or ideas without giving that person credit; by doing this, students are, in effect, claiming credit for someone else's thinking. Both direct quotations and paraphrases must be documented. Even if students rephrase, condense or select from another person's work, the ideas are still the other person's, and failure to give credit constitutes misrepresentation of the student's actual work and plagiarism of another's ideas. Buying a paper or using information from the

World Wide Web or Internet without attribution and handing it in as one's own work is plagiarism.

c. **Falsifying records** or providing misinformation regarding one's credentials.
d. **Unauthorized collaboration** on computer assignments and unauthorized access to and use of computer programs, including modifying computer files created by others and representing that work as one's own.

For more information, review OU's Academic Conduct Regulations. (Link to Academic Conduct Regulations: https://www.oakland.edu/deanofstudents/policies/)

2. Behavioral Code of Conduct**.** Appropriate behavior is required in class and on campus. Disrespectful, disruptive and dangerous behavior are not conducive to a positive learning environment and may result in consequences. Core Standards for Student Conduct at OU includes
   a. **Integrity.** See academic conduct policy points above.
   b. **Community.** Policies regarding disruptive behavior, damage and destruction, weapons, and animals.
   c. **Respect.** Policies regarding harassment, hazing, and sexual misconduct (Link to Sexual Misconduct policy: https://www.oakland.edu/policies/health-and-safety/625/)
   d. **Responsibility**. Policies regarding alcohol, drugs, and other substances

See the **Student Code of Conduct** for details. (Link to Student Code of Conduct: https://www.oakland.edu/deanofstudents/student-code-of-conduct/philosophy-and-purpose/)

Accommodation and Special Considerations

Oakland University is committed to providing everyone the support and services needed to participate in their courses. Students with disabilities who may require special accommodations should make an appointment with campus Disability Support Services (DSS). If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Support Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. DSS determines accommodations based on documented disabilities. Contact DSS at 248-370-3266 or by e-mail at dss@oakland.edu.
For information on additional academic support services and equipment, visit the Study Aids webpage of Disability Support Services website. (Link to Disability Support Services website: https://www.oakland.edu/dss/)

Excused Absence Policy

This policy for university excused absences applies to participation as an athlete, manager or student trainer in NCAA intercollegiate competitions, or participation as a representative of Oakland University at academic events and artistic performances approved by the Provost or designee. A student must notify and make arrangements with the instructor in advance. For responsibilities and procedures see Academic Policies and Procedures. (Link to Academic Policies and Procedures: https://www.oakland.edu/deanofstudents/conduct-regulations/)

Religious Observances

Student should discuss with instructor at the beginning of the semester to make appropriate arrangements. Although Oakland University, as a public institution, does not observe religious holidays, it will continue to make every reasonable effort to help students avoid negative academic consequences when their religious obligations conflict with academic requirements. See The OU Diversity Calendar for more information. (Link to calendar: https://www.oakland.edu/diversity/calendar/)

Add/Drops

The university policy will be explicitly followed. It is the student's responsibility to be aware of deadline dates for dropping courses and officially drop the course. (Link to deadlines for dropping courses: https://www.oakland.edu/registrar/registration/dropornot/)

Faculty Feedback: OU Early Alert System

As a student in this class, you may receive "Faculty Feedback" in your OU e-mail if your professor identifies areas of concern that may impede your success in the class. Faculty Feedback typically occurs during weeks 2-5 of the Fall and Winter terms, but may also be given later in the semester and more than once a semester. A "Faculty Feedback" e-mail will specify the area(s) of concern and recommend action(s) you should take. Please remember to check your OU email account regularly as that is where it will appear. This system is to provide early feedback and intervention to support your success. (Link to Faculty Feedback for students: https://www.oakland.edu/advising/faculty-feedback/)

Emergency Preparedness

In the event of an emergency arising on campus, the instructor will notify you of actions that may be required to ensure your safety. It is the responsibility of each student to understand the evacuation and "lockdown" guidelines to follow when an emergency is declared. These simple steps are a good place to start:

- OU uses an emergency notification system through text, email, and landline. These notifications include campus closures, evacuation, lockdowns and other emergencies. Register for Emergency Notification. (Link to register for emergency notification: https://oupolice.com)
- Based on the **class cellphone policy**, ensure that one cellphone is on in order to receive and share emergency notifications with the instructor in class.
- If an emergency arises on campus, call the OUPD at **248-370-3331**. Save this number in your phone, and put it in an easy-to-find spot in your contacts.
- Review protocol for evacuation, lockdown, and other emergencies via the classroom's red books (hanging on the wall) and at Oakland University Police Department's Emergency Management webpage. (Link to emergency management webpage: https://oupolice.com/em/)
- Review with the instructor and class what to do in an emergency (evacuation, lockdown, snow emergency).

EXS 3020 BIOMECHANICS
OAKLAND UNIVERSITY, SCHOOL OF HEALTH SCIENCES
EXERCISE SCIENCE PROGRAM
DEPARTMENT OF HUMAN MOVEMENT SCIENCE

TITLE OF COURSE: Biomechanics (formerly Human Motion Analysis) **REVISED COURSE**
COURSE #: EXS 3020
CREDITS: 3
DAY/TIME:
YEAR: Fall 2019
PROFESSOR:
CLASS LOCATION:
OFFICE PHONE NUMBER:
EMAIL:
OFFICE:
OFFICE HOURS:

COURSE DESCRIPTION: The anatomical kinesiology and the mechanical bases of human movement in daily life, exercise, rehabilitation, sport, and work settings are analyzed.
Course Pre-requisites: BIO 2100 (or BIO 205)

LEARNING OUTCOMES:
The student will be able to:

1. Describe the anatomical kinesiology and the mechanical bases of human movement.
2. Discuss the kinesiology and mechanical bases of human movement in daily live and exercise.
3. Analyze the anatomical kinesiology and the mechanical bases of human movement in rehabilitation, sport, and work settings.
4. Apply the concepts of anatomical kinesiology and the mechanical bases of human movement

COURSE MATERIALS/TEXTBOOKS:

Basic Biomechanics . by Hall, Susan Publisher: McGraw-Hill Higher Education Print ISBN: 9780073522760, 0073522767. eText ISBN: 9780077822170, 007782217X . Edition: 7th

COURSE FORMAT: Lecture; partially on-line.

ASSIGNMENTS/ASSESSMENT:
Assignements, quizzes, and exams.

GRADING SCALE:

Percentage	Points	Honor Points	Grade
94% - 100%	376 - 400	4.0	A
88% - 93.99%	352 - 375	3.7	A-
82% - 87.99%	328 - 351	3.3	B+
78% - 81.99%	311 - 327	3.0	B
74% - 77.99%	290 - 310	2.7	B-
71% - 73.99%	281 - 289	2.3	C+
68% - 70.99%	271 - 280	2.0	C
64% - 67.99%	251 - 270	1.7	C-

61% - 63.99%	242 - 250	1.3	D+
60% - 60.99%	238 - 241	1.0	D
59.99% or below	0 - 237	0.0	F

TENTATIVE CLASS SCHEDULE:

USING MOODLE AND OTHER TECHNOLOGIES:

Technology Back-up Plan

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OAKLAND UNIVERSITY
SCHOOL OF HEALTH SCIENCES

EXERCISE SCIENCE –DEPARMENT OF HUMAN MOVEMENT SCIENCE

COURSE: EXS 4030 **NEW COURSE**

COURSE TITLE: Assessment and Interventions Laboratory

COURSE CREDIT: 3 credits

SEMESTER/YEAR:

COURSE LOCATION: 5054 Human Health Building

TIME:

PROFESSOR: Elise Brown, PhD, CSCS

LAB ASSISTANT:

OFFICE HOURS:

COURSE DESCRIPTION: Prepare students for the rigors of implementing health risk appraisals and health-related fitness assessment techniques. Design of intervention strategies for lifestyle and health enhancement and disease prevention are covered.

PRE-REQUISITE COURSE: WRT 1060 or equivalent, BIO 2100 Human Anatomy or equivalent, BIO 2102 Human Anatomy Lab or equivalent, HS 2000 Health in Personal and Occupational Environments or equivalent.

EXS 1000 and EXS 1100 strongly recommended.

COURSE OBJECTIVES: At the conclusion of the course the student will:

1) Be competent to assess a client's state of wellness.
2) Be competent to conduct a health risk appraisal.
3) Complete a personal health risk appraisal via testwell.org.
4) Be competent to assess and explain health-related fitness using recognized assessment techniques.
5) Be competent to prescribe exercise and recommend appropriate complementary lifestyle interventions for health and fitness enhancement.
6) Pass a practical assessment examination, and demonstrate appropriate clinical skills.

REQUIRED TEXT/READINGS:

ACSM's *Health-related physical fitness assessment manual, 4rd Edition* (2014). Lippincott, Williams and Wilkins.

RECOMMENDED:

ACSM's *Resources for the personal trainer, 4nd Edition* (2014). Lippincott, Williams and Wilkins.

ACSM's *Guidelines for Exercise Testing and Prescription, 10th Edition* (2018). Lippincott, Williams and Wilkins.

Exercise instruction and kinesiology website: http://www.exrx.net/Exercise.html

Wellness definitions and assessment website:
http://www.definitionofwellness.com/index.html

COURSE PROCEDURES: The course is a laboratory course. It is designed as a practical course to convey clinical skills necessary to function effectively in the workplace. Most lab sessions will take the format of a brief introduction followed by active involvement by students under instructor guidance.

EXPECTATIONS OF STUDENTS:

- **Assigned readings must be completed prior to attendance at each class.**
- **Attendance is mandatory for all labs**. Absence has to be supported by documentary medical evidence; or, appropriate written explanation/appeal in advance of missing a class. A grade deduction of 1% per missed class, or 0.5% per late arrival will occur. Poor attendance will result in lower grades up to a maximum of 5%, plus review of academic standing within the EXS program.
- Students are expected to dress appropriately and to take an **active part** in labs. Be prepared for exercise at every lab. Dress should be professional fitness attire, and gym shoes. Inappropriate attire is unprofessional.
- **Informed consent:** Assessment in the field of exercise science/wellness, of necessity, involves close human interaction, personal touch, at times limited states of dress, and a limited, but inherent risk of injury. The instructor undertakes to ensure appropriate professional procedures at all times, in keeping with the *Guidelines of the American College of Sports Medicine* and with due regard for the treatment of human subjects. **Therefore, continuation in this course is considered evidence of informed consent and acceptance of conditions stipulated in the course/program.** Concerns should be expressed at the beginning of the semester and if not given a satisfactory explanation by the instructor, students have recourse to the Dean of the School of Health Sciences.
- **Cell-phone and lap-top policy:**
- The requirement for all students to have a HRA is satisfied in this course. There are certain minimum expectations of all students to assure compliance with this expectation.
- Short quizzes or practical tests may be administered throughout the semester, covering material from the previous class session. These will be randomly administered.
- **Written laboratory assignments will be required.**

- **A practical project involving a HRA and personal lifestyle prescription must be done.**
- **An observation and written reflection of a fitness assessment experience are required.**
- **A practical examination will be administered.**
- ***Accommodation and Special Considerations***
- Oakland University is committed to providing everyone the support and services needed to participate in their courses. Students with disabilities who may require special accommodations should make an appointment with campus Disability Support Services (DSS). If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Support Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. DSS determines accommodations based on documented disabilities. Contact DSS at 248-370-3266 or by e-mail at dss@oakland.edu.
- For information on additional academic support services and equipment, visit the Study Aids webpage of Disability Support Services website. (Link to Disability Support Services website: https://www.oakland.edu/dss/)

ACADEMIC INTEGRITY: The faculty of the School of Health Sciences believes that the conduct of a student taking courses in the School should be consistent with that of a professional person. Courtesy, honesty, and respect should be shown by students toward faculty members, guest lecturers, administrative support staff, and fellow students. Similarly, students should expect faculty to treat them fairly, showing respect for their ideas and opinions and striving to help them achieve maximum benefits from their experience in the School.

Student academic misconduct refers to behavior that may include plagiarism, cheating, fabrication, falsification of records or official documents, intentional misuse of equipment or materials (including Handout materials), and aiding and abetting the perpetration of such acts. The preparation of reports, papers, and examinations, assigned on an individual basis, must represent each student's own effort. Reference sources should be indicated clearly. The use of assistance from other students or aids of any kind during a written examination, except when the use of aids such as electronic devices, books or notes has been approved by an instructor, is a violation of the standard of academic conduct expected in this course. Evidence of academic misconduct will result in being sent to the Dean of Students, a grade of zero on the relevant assignment, and failure of the class. The Oakland University policy on academic conduct will be strictly followed with no exceptions. See catalog under Academic Policies and Procedures.

GRADING SCALE: EXS program grading scale consistent with the university grading scale effective fall 2018.

Percentage	Points	Honor Points	Grade
94% - 100%	376 - 400	4.0	A
88% - 93.99%	352 - 375	3.7	A-
82% - 87.99%	328 - 351	3.3	B+
78% - 81.99%	311 - 327	3.0	B
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61% - 63.99%	242 - 250	1.3	D+
60% - 60.99%	238 - 241	1.0	D
59.99% or below	0 - 237	0.0	F

Evaluation/Grading	**% of Grade**	**Date**
Written lab completion (5 at 6% each):	30%	Per schedule
Forum postings and video assignments:	5%	Per schedule
Project: Includes Personal HRA and Fitness Assessment;Personal CVF, Strength, Flexibility Rx; Personal Lifestyle Rx	20%	Per schedule
Health/Fitness Assessment Experience and Reflection (Service Learning)	15%	Per schedule
[Tentatively Wednesday, April 11th (6-8pm) and Saturday, April 14th (12-4pm)]		
Practical Exam	30%	Per schedule

NOTE: Failure to submit an assignment by class time on a due date will result in a 50% mark reduction, and if more than one day late (after class time) a zero grade for that assignment.

Also note that failure to submit ALL REQUIRED ASSIGNMENTS will result in an incomplete (I) grade until all course expectations are fulfilled. Failure to subsequently fulfill all expectations will result in a failing grade. In addition, it is an expectation that students pass all individual sections of the evaluation, namely written labs, the project, and final practical examination. Failure to pass all sections may result in failing the course.

HINT: You can improve your final practical exam performance if you ask to have your skills assessed throughout the semester. If the professor is not available, ask the teaching assistant or a competent peer. Practice, practice, practice!

**** Readings:** 1. ACSM 1: = Assessment Manual 2. ACSM 2: = Resources for the personal trainer

3. TP = Thibodeau and Patton 4. C/C: Culture Clash

A NOTE ABOUT THE SCHEDULE BELOW: Chapters 17, the Digestive System and Chapter 18, Nutrition and Metabolism, are not covered.

DAY/DATE	TOPICS	TO DO LIST	READING (prior)
T 9 *5054HHB*	*Pre-assessment Screening* *Wellness Assessment. PAR-Q.* *Health History Questionnaire.* *Heart rate; Blood pressure. PART 1* *Rest HR & BP*	*Review Syllabus & Schedule* *Complete www.realage.com and* *post reaction*	*ACSM 1: Chapters 1-3*
1	*Heart rate; Blood pressure. PART 2* *Exercise HR & BP, Height, Weight, Waist Circumference, WHtR*	*Practice resting HR/BP outside of class* *Complete AHA My Life Check and post reaction; Review Writing Guidelines*	*ACSM 1: Chapter 3*
2	*Body Composition Assessment*	***HR & BP lab due*** *Complete Vitality Compass and post*	*ACSM 1: Chapter 4*
3	*Body Comp & HR/BP Skills practice*	***Body Composition lab due***	
4	*Posture and flexibility Assessment* *Stretching. Yoga.*	*Forum:* ***Post when and where you will be having a Fitness Assessment***	*ACSM 1: Chapter 6* *ACSM 2: Chapter 16*
5	*Muscular Fitness Assessment* *Part 1*	***Posture and Flexibility lab due***	*ACSM 1: Chapter 5*

	Familiarization session for back squat and bench press	*Definition of Wellness Assessment/post*	
6	*Muscular Fitness Assessment Part 2* *5 RM Testing for Back Squat, YMCA Bench, Sorenson Test*	*Complete Dynamic Muscular Test on your own time.*	*ACSM 1: Chapter 5* *ACSM 2: Chapter 14*
7	*Muscular Fitness Assessment Part 3* *1 RM Testing for Back Squat, Flexed Arm Hang, Resistance Training Prescription*		*ACSM 1: Chapter 5* *ACSM 2: Chapter 14*
8	*Cardiovascular Fitness - Part 1* *Astrand 6-minute cycle test*	***Muscular Fitness lab due*** *Bring BP equipment*	*ACSM 1: Chapter 7*
9	*Cardiovascular Fitness - Part 2 Rockport 1-Mile Walk Test Step Test.*	*Complete Metabolic Calculation Practice Problems.*	*ACSM 1: Chapter 7* *ACSM 2: Chapter 15*
10	*Cardiovascular Fitness - Part 3* *Cooper 12 minute walk/run test* *Cardiovascular Fitness Prescription*	***Forum due**: Reflect on your Fitness Assessment Observation Respond to at least 1 classmates post*	*ACSM 1: Chapters 7* *ACSM 2: Chapter 15*
11	*Skills Review Session; Lab make-up*		
12	*Student practical examinations* *Service Learning Assessments*	***Cardiovascular Fitness lab due*** *Return equipment*	
13	**Complete reflection of fitness assessments**	***Personal Project due (April 16)***	

EXS 4960 PRACTICUM
OAKLAND UNIVERSITY, SCHOOL OF HEALTH SCIENCES
EXERCISE SCIENCE PROGRAM
DEPARTMENT OF HUMAN MOVEMENT SCIENCE

TITLE OF COURSE: Practicum (REVISED COURSE)
COURSE #: **EXS 4960**
CREDITS: 3
DAY/TIME:
YEAR:
PROFESSOR:
OFFICE PHONE NUMBER:
EMAIL:
OFFICE:
OFFICE HOURS:

COURSE DESCRIPTION: Supervised exercise science experience in a program-approved setting. Students demonstrate exercise science competencies, keep a daily journal, write a critical analysis of the experience, and successfully pass site supervisor evaluation. (Formerly EXS 401).

COURSE PRE-REQUISTES: (HS 2000 or HS 201), (EXS 3010 or EXS 304), (EXS 3020 or EXS 350), and (EXS 4030 or equivalent completed with a C+ or better). Complete all requirements for health insurance, health clearance, vaccinations, CPR certification and background checks as outlined in the EXS 4030 Practicum Handbook. EXS program director permission.

LEARNING OUTCOMES:
The student will be able to:
1. Demonstrate exercise science competencies.
2. List and describe practicum activities and experiences.
3. Critically analyze the practicum experience.
4. Satisfactorily complete the practicum site expectations as documented on the site supervisor evaluation.

COURSE FORMAT: Practicum

CLASS SCHEDULE:
The student will complete 192 hours during the semester as scheduled with the practicum site.

ASSIGNMENTS/ASSESSMENT:
GRADING SCALE:
Satisfactory/Unsatisfactory grading:

USING MOODLE AND OTHER TECHNOLOGIES:

Technology Back-up Plan

- In the event that your computer crashes or internet goes down, it is essential to have a "backup plan" in place where you are able to log in using a different computer or travel

another location that has working internet.
- Any files you intend to use for your course should be saved to a cloud solution (Google Drive, Dropbox, etc.) and not to a local hard drive, USB stick or external disk. Saving files this way guarantees your files are not dependent on computer hardware that could fail.

Technology Help

- For help using Moodle, use the Get Help link at the top of the Moodle page (moodle.oakland.edu).
- For access to technology and in-person assistance, call or visit the Student Technology Center (Link to Student Technology Center: https://www.oakland.edu/stc/).
- For general technology assistance, consult the OU Help Desk (Link to Help Desk: https://www.oakland.edu/helpdesk/).

Respect Rules of Netiquette

e. Respect your peers and their privacy.
f. Use constructive criticism.
g. Refrain from engaging in inflammatory comments.

CLASSROOM AND UNIVERSITY POLICIES:

Classroom Behavior

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   i. **Cheating.** This includes using materials such as books and/or notes when not authorized by the instructor, copying from someone else's paper, helping someone else copy work, substituting another's work as one's own, theft of exam copies, falsifying data or submitting data not based on the student's own work on assignments or lab reports, or other forms of misconduct on exams.
   j. **Plagiarizing the work of others.** Plagiarism is using someone else's work or ideas without giving that person credit; by doing this, students are, in effect, claiming credit for someone else's thinking. Both direct quotations and paraphrases must be documented. Even if students rephrase, condense or select from another person's work, the ideas are still the other person's, and failure to give credit constitutes misrepresentation of the student's actual work and plagiarism of another's ideas. Buying a paper or using information from the World Wide Web or Internet without attribution and handing it in as one's own work is plagiarism.
   k. **Falsifying records** or providing misinformation regarding one's credentials.
   l. **Unauthorized collaboration** on computer assignments and unauthorized access to and use of computer programs, including modifying computer files created by others and representing that work as one's own.

   For more information, review OU's Academic Conduct Regulations. (Link to Academic Conduct Regulations: https://www.oakland.edu/deanofstudents/policies/)

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    a. **Integrity.** See academic conduct policy points above.
    b. **Community.** Policies regarding disruptive behavior, damage and destruction, weapons, and animals.
    c. **Respect.** Policies regarding harassment, hazing, and sexual misconduct (Link to Sexual Misconduct policy: https://www.oakland.edu/policies/health-and-safety/625/)
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Add/Drops

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- Based on the **class cellphone policy**, ensure that one cellphone is on in order to receive and share emergency notifications with the instructor in class.
- If an emergency arises on campus, call the OUPD at **248-370-3331**. Save this number in your phone, and put it in an easy-to-find spot in your contacts.
- Review protocol for evacuation, lockdown, and other emergencies via the classroom's red books (hanging on the wall) and at Oakland University Police Department's Emergency Management webpage. (Link to emergency management webpage: https://oupolice.com/em/)
- Review with the instructor and class what to do in an emergency (evacuation, lockdown, snow emergency).

TITLE OF COURSE: Directed Research **(REVISED COURSE)**
COURSE #: EXS 4995
CREDITS: 3
DAY/TIME:
YEAR:
PROFESSOR:
CLASS LOCATION:
OFFICE PHONE NUMBER:
EMAIL:
OFFICE:
OFFICE HOURS:

COURSE DESCRIPTION: Participation in a research project, under the direction of a faculty sponsor. May be repeated once for additional credit. Prerequisite(s): Instructor Permission

LEARNING OUTCOMES:

1. Demonstrate a basic understanding of the ethical issues associated with conducting exercise science research (e.g. informed consent, privacy issues).
2. Contribute to a research-based project through the recruitment of subjects, collection of data and/or analysis of results.
3. Gain experience reading recent published studies related to the research project.
4. Practice presentation of findings related to the research project in written and/or oral forms.

COURSE FORMAT:
Practicum. Project-based learning

CLASS SCHEDULE:
Developed by instructor in accordance with logistics of the research project to be undertaken by the student.

ASSESSMENT:
Typical items to be assessed for this course include:

1) Achievement of student ethical certification through the Oakland University IRB CITI program.
2) Meeting research goals in terms of gathering data from a predetermined number of participants or completing specified data analyses.
3) Reading a required number of published research studies.
4) Discussing research findings in either a written (paper) or oral (presentation) format

GRADING SCALE:

Highest	Lowest	Grade
100%	94%	A
93.99%	88%	A-
87.99%	82%	B+

81.99%	78%	B
77.99%	74%	B-
73.99%	71%	C+
70.99%	68%	C
67.99%	64%	C-
63.99%	61%	D+
60.99%	60%	D
59.99%	0%	F

USING MOODLE AND OTHER TECHNOLOGIES:

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EXS 4996 INDEPENDENT STUDY
OAKLAND UNIVERSITY, SCHOOL OF HEALTH SCIENCES
EXERCISE SCIENCE PROGRAM
DEPARTMENT OF HUMAN MOVEMENT SCIENCE

TITLE OF COURSE: Independent Study (REVISED COURSE-IS is SPLIT is FROM EXS 4995)
COURSE #: EXS 4996

CREDITS: Variable (1-4 CREDITS)
DAY/TIME:
YEAR:
PROFESSOR:
OFFICE PHONE NUMBER:
EMAIL:
OFFICE:
OFFICE HOURS:

COURSE DESCRIPTION: Student initiated and problem-oriented independent study focused on a topic in exercise science. May be repeated for additional credit. Graded Satisfactory/Unsatisfactory. Requires instructor permission.

LEARNING OUTCOMES:
The student will be able to:

1. Describe a topic of interest in exercise science.
2. List 2 – 4 objectives for studying the topic of interest.
3. Outline a plan of study and describe the activities, with a timeline, to be completed to meet the objectives.
4. Initiate the plan of study, as approved by the course instructor, according to the timeline.
5. Satisfactorily complete the required activities.
6. Initiate and effectively communicate with the course instructor regarding progress with the approved plan of study and activities.

COURSE FORMAT: Independent study.

CLASS SCHEDULE:
Determined by the course instructor and student.

ASSIGNMENTS/ASSESSMENT:

1. Written plan of study including a description of the topic of interest, 2-4 objectives, an outline of the plan of study, a description of the activities, and a timeline. The proposed plan of study including the activities to be completed must be approved by the course instructor.
2. Satisfactory completion of the activities proposed in the plan of study.
3. Effective communication with the course instructor in order to satisfactorily complete the independent study.

GRADING SCALE:
Satisfactory/Unsatisfactory grading:

Satisfactory grade is 68% or better. Unsatisfactory grade is 67.99% and below.

USING MOODLE AND OTHER TECHNOLOGIES:

Technology Back-up Plan

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- Review protocol for evacuation, lockdown, and other emergencies via the classroom's red books (hanging on the wall) and at Oakland University Police Department's Emergency Management webpage. (Link to emergency management webpage: https://oupolice.com/em/)
- Review with the instructor and class what to do in an emergency (evacuation, lockdown, snow emergency).

APPENDIX D

Comparison of BS in HS with proposed BS in EXS 6.25.2018

Requirements			**Credits**		**Change**
General Education Requirements			**Up to 56 Credits**	**Up to 56 Credits**	**Note**
Requirement	**Current BS in HS** ***Course***	**Proposed BS in EXS 6.25.2018** ***Course***	***Credits in req courses /major***	***Credits***	***Change***
Writing Foundations (2.0 required)	WRT 1060 (pre-req WRT 1050 min 2.0 or placement by ACT score no credit for 1050.)	WRT 1060 (pre-req WRT 1050 min 2.0 or placement by ACT score no credit for 1050.)		4	None
Writing Intensive Gen Ed				4	None
Formal Reasoning	Satisfied by required course STA 2220	Satisfied by required course STA 2220	4		None
Arts				4	None
Foreign Lang & Culture				4	None
Global Perspective				4	None
Literature				4	None
Nat Sci & Technology	Satisfied by required courses (BIO, CHM or PHY)	Satisfied by required courses (BIO, CHM or PHY)	4		None
Social Science	Satisfied by req course (PSY)	Satisfied by req course (PSY)	4		None

Western Civ				4	None
Knowledge App	Satisfied by req course (PHY)	Satisfied by req course (PHY)	4		None
Diversity	4 (taken with another gen ed)		4 (taken with another gen ed)		None
Writing Intensive in Major	Satisfied by HS 4500 Law, Values and Health Care (4 credits)	Satisfied by EXS 4715 Integrated Lab	3		EXS course instead of HS course
Capstone in Major	Satisfied by HS 4500 Law, Values and Health Care (4 credits)	Satisfied by EXS Integrated Lab 4715	3		EXS course instead of HS course
Up to 56 Credits				28 credits not double counted	
Required Courses	***BS in HS (current EXS and pre-PT concentrations)***	***BS in EXS***	***39 credits for BS in EXS***	***Comments***	***Change***
Bio 1200 Bio 1	Required BS	Required	4		None
Bio 2100 Human Anatomy (pre-req Bio 1)	Required BS	Required	4		None
Bio 2101 or Bio 3621 Human Anatomy or Anatomy Physiology Lab	Required BS	Required	1		None
Bio 2600 Human Physiology	Required BS	Required	4		None
Math 1441 Pre-Calculus	Required in Pre-PTconcentration	Required	4		Added to BS EXS

Psychology 1000 Intro Psychology	Required BS	Required	4		None
Psychology 2500 Intro to Research Design	Required in EXS and pre-PT concentrations	Required	4	(or HS 2250 research design course)	Added to BS in EXS not just in concentration
Chemistry 1 CHM 1440 & CHM lab 1470	Required in EXS and pre-PT concentrations	Required	5 (4 & 1)		Added to BS in EXS not just in concentration
Statistics STA Introductory 2220	Required in EXS and pre-PT concentrations	Required	4		Added to BS in EXS not just in concentration
Physics 1 PHY 1010 & PHY 1100	Required in EXS and pre-PT concentrations	Required	5 (4 & 1)		Added to BS in EXS not just in concentration
EXS Major Courses -Required	**BS in HS BS in HS (current EXS and pre-PT concentrations)**	**BS in EXS**	**35 credits for BS in EXS**	**Comments**	**Change** **Courses now in EXS major**
HS 2000 Health in Personal & Occupational Environments	Required BS	Required	4		None
EXS 1000 or EXS 1100 Strength & Conditioning or Cardiovascular Fitness Training	Both required for EXS concentration only	One course is required	2		1 course in EXS major not just in EXS concentration
EXS 2200 Introduction to EXS	Not required	Required	2		Added to BS in EXS
EXS 2410 Nutrition for Exercise, Sport & Health	EXS 2400 was required in EXS and pre-PT concentrations	Required	3	Reduced 1 credit from 4 to 3 credits	Replaces EXS 2400 Nutrition, Weight Control and Exercise (4)

EXS 2700 Safety & First Aid	Required in EXS and pre-PT concentrations	Required	2		None
EXS 3010 Ex Physiology	Required in EXS and pre-PT concentrations	Required	3		None
EXS 3020 Biomechanics	Required in EXS and pre-PT concentrations	Required	3	Reduce to from 4 to 3 credits-no longer writing intensive	Changed name to Biomechanics from Human Motion Analysis
EXS 3030 Motor Control	Required in EXS concentration (2018)	Required	3		Added to BS in EXS major
EXS 4715 Integrated Laboratory	New course not previously required (there was a 1 credit EXS 3015 Physiology Lab in the concentrations	Required	3	New course in 2018. Will integrate the three main EXS courses EXS 3010, 3020 and 3030.	Added to BS in EXS This course will be the writing intensive in the major and the capstone.
EXS 4960 Practicum or EXS 4995 Directed Research	EXS 4960 required in EXS concentration	Required	3		Added to BS in EXS major
EXS 4030 Assessment and Interventions	No course	Required	3	New course Added based on feedback from practicum sites to improved skills prior to	Added to BS in EXS major

				practicum	
EXS electives3000/4000 level electives	Required in EXS concentration only (4 credits)	Required	4		Added to BS in EXS major
Pre-PT concentration (showing courses that were in addition to those listed in the EXS major)	***BS in HS pre-PT concentration***	***BS in EXS pre-PT concentration***	***Min of 21 credits***	***Comments***	***Change***
CDS 2100 Medical Terminology	Required	Required	1		None
CDS 4010 Pathology	Required	Required	4		None
PT 3020 PT as a Profession	Required	Required	2		None
Psych 2250 (second Psych) Developmental Psychology	Required	Required	4		None
Chemistry 2 Chem II 1450 and Chem 1480 Lab	Required	Required	5 (4 & 1)		None
Physics 2 PHY 1020 and PHY1110 Lab	Required	Required	5 (4 & 1)		None
PT 4630 Basic Athletic Training	Required	Not required			EXS 4630 Basic Athletic Training is an elective
Approved electives			Min of 1 elective credits to total 124 credits		Min 12 electives in HS
EXS concentration in the BS in HS –showing courses that were in addition to those listed in the EXS major ***(eliminated EXS concentration from BS in EXS as EXS is now the major)***	***BS in HS -EXS concentration***	***BS in EXS*** ***Now a major not a concentration***		***Comments***	***Change***
HS 4410 - Integrative Holistic Medicine Principles	Required in EXS concentration	Not required	**4**		Not required May be an

and Practice (4 credits)					elective
Psych 2250 (second Psych) Lifespan or Developmental	Required a second psych (Behavioral, Health etc)	Second psych not required	**4**		Not required May be an elective
Chemistry 2 Chem II 1450 and Chem 1480 Lab	Required	Not required	**(4 +1)**		Not required May be an elective
Physics 2 PHY 1020 and PHY1110 Lab	Required	Not required	**(4 +1)**		Not required May be an elective
Electives	Minimum of 12	Minimum of 22			Room for electives, minors, or additional EXS electives.

Summary of Changes between in the BS in EXS and the BS in HS (with pre-PT and EXS concentrations)

Categories	**BS in EXS** **Pre–PT Concentration Credits**	**BS in EXS with no concentration** (room for EXS focus or for minor)	**BS in HS with pre-PT and EXS concentrations**	**BS in HS with pre-PT and EXS concentrations-** **Changes**
Gen Ed	24-28 (given overlap with required and major courses)	24-28 (given overlap with required and major courses)	24-28 (given overlap with required and major courses)	None
Required Courses	39	39	29	Increased number of credits by 14 credits
EXS Major Courses	35	35	0	Major credits of 35
Concentration	21	0	EXS Concentration– 59 credits Pre-PT	No EXS concentration. Pre-PT concentration is now 38 less credits. The majority of the

			Concentration -59 Credits. Many of the courses were not EXS or HS courses.	credits were in the concentration. Majority of the credits are now in required classes and classes for the major.
Elective Credits	Min of 1 elective credit to total 124 credits (depending on gen ed credits)	Minimum of 22 credits to total 124 credits (depending on gen ed credits. Possibility for minor or additional EXS credits in area of interest	Min of 12 elective credits	BS in EXS pre-PT concentration- number of elective credits is reduced. BS in EXS major – no concentration and room for more elective credits to include a minor
Total Required	**124 credits**	**124 credits**	**124 credits**	

Current EXS Undergraduate Course Descriptions (8-20-2018)

EXS 1000 - Exercise (Strength Training) and Health Enhancement

(2)Examination of lifestyle factors related to disease prevention and improved quality of life. Combines regular strength training exercise and health enhancement lectures. Offered all semesters. (Formerly EXS 103).

EXS 1100 - Cardiovascular Fitness Training

(2) Examination of lifestyle factors related to disease prevention and improved quality of life. Combines exposure to walking-jogging exercise, aerobics exercise, standard cardiovascular training equipment, swimming exercise and health enhancement lectures. Offered all semesters. (Formerly EXS 105)

EXS 1500 - Exercise (Judo) and Health Enhancement

(2) Impact of judo exercise on fitness, weight management, and general wellness. Emphasis on how the body, particularly cardiovascular systems and muscles, responds to judo training, and learning simple biomechanics of the sport. Recommended for students wishing to learn judo and understand exercise science principles in a practical, real life setting. (Formerly EXS 106)

EXS 2000 - Group Exercise Instruction I

(2) Theory and practice of safe and effective exercise instruction for individual and group resistance training programs. Excellent preparation for personal training. Focus on program design, practical skills

of exercise instruction, progression, effective communication, facilities and equipment, legal issues, and risk management. Summer semester. (Formerly EXS 203)
Prerequisite(s): (EXS 1000 or EXS 103) or instructor permission.

EXS 2100 - Group Exercise Instruction II

(2)Theory and practice of safe and effective exercise instruction for group aerobic exercise training programs. Focus on training class styles and formats, practical skills of exercise instruction, progression, cueing, pattern building, choreography, and learning styles including visual, kinesthetic and auditory. Land-and water-based programs. Summer semester. (Formerly EXS 205)
Prerequisite(s): (EXS 1100 or EXS 105), (EXS 2000 or EXS 203) or instructor permission.

EXS 2200 - Introduction to Exercise Science

(2) Introduction to the basic concepts from different areas of exercise science (e.g. motor learning, exercise physiology, biomechanics). Offered summer semester. (Formerly EXS 202)

EXS 2400 - Weight Control, Nutrition and Exercise

(4) Exploration of the role of exercise and optimal nutrition in weight control/loss. Emphasis on effective eating, energy balance, physiology of weight loss, behavior modification and health risks of obesity. Includes practical laboratory experiences. Recommended for students wishing to develop successful weight loss/control skills and improved nutritional habits. Fall, winter and summer semesters. (Formerly EXS 204

EXS 2500 - Stress Management

(2) Students will learn concepts and skills to enable them to manage stress effectively. This course is experiential and interactive. The course presents materials on exercise, time management, meditation, mindfulness, relaxation, and other stress management techniques. Offered every semester, some semesters on line. (Formerly EXS 215)

EXS 2700 - Safety and First Aid in Exercise Settings

(2) Learn how to recognize emergencies, make first aid decisions, and provide immediate, temporary care of accident or sudden illness victims. Healthy living in injury/illness prevention. Use of an Automatic External Defibrillator Basic Life Support (BLS) for the Healthcare Provider (American Heart Association) Certification and First Aid Certification upon successful completion. (Formerly EXS 207)

EXS 3010 - Exercise Physiology

(3) Effects of exercise and physical training on the physiological systems of the body, with emphasis on cardio-respiratory systems. Includes muscle contraction mechanisms, circulatory and respiratory adjustment during exercise, and nutrition for physical activity. (Formerly EXS 304)
Prerequisite(s): (BIO 1200 or BIO 111) and (BIO 2600 or BIO 207)
Corequisite(s): (EXS 3015 or EXS 306)

EXS 3015 - Exercise Physiology Laboratory

(1) Laboratory experiences are provided for insight into the dynamics of human movement from research and clinical perspectives. (Formerly EXS 306)
Prerequisite(s): (BIO 1200 or BIO 111) and (BIO 2600 or BIO 207)
Corequisite(s): (EXS 3010 or EXS 304)

EXS 3020 - Human Motion Analysis

(4) The anatomical kinesiology and the mechanical bases of human movement in daily life, exercise rehabilitation, sport, and work settings are analyzed. *Satisfies the university general education requirement for a writing intensive course in general education or the major, not both. Satisfies the university general education requirement for the capstone experience. Prerequisite for writing intensive: completion of the university writing foundation requirement. (Formerly EXS 350)*
Prerequisite(s): (BIO 2100 or BIO 205)

EXS 3030 - Motor Control

(3) The study of how the nervous and muscular systems coordinate body movements and become skilled with basic and advanced movements.
Prerequisite(s): (BIO 2600)

EXS 4100 - Introduction to Personal Training

(2) An introduction to the concepts used in personal training. Covers theoretical knowledge and practical skills needed to prepare for a national certification exam in personal training. Topics include exercise testing, prescription, and leading, progression, individualization, goal-setting, logistics, client motivation, safety health promoting behaviors and effective communication. Cross list with EXS 5100. Offered summer semester. (Formerly EXS 470)
Prerequisite(s): (EXS 1000 or EXS 103), (EXS 3010 or EXS 304), (EXS 3015 or EXS 306), (EXS 3020 or EXS 350)

EXS 4110 - Advanced Personal Training

(2) Theoretical knowledge and practical skills in advanced personal training including training for special cases: high-performance athletes, musculoskeletal injuries, wheel-chair bound clients, chronic diseases, the elderly, and children. Periodization, plyometrics, exercise with specialized equipment, innovative use of available resources, and best practices for commercial success also covered. Cross list with EXS 5110. Offered summer semester. (Formerly EXS 475)
Prerequisite(s): (EXS 4100 or EXS 470)

EXS 4200 - Physical Activity and Aging

(2) The effects of aging on physical work capacity, body composition, and cardiovascular, pulmonary, neuromuscular and musculoskeletal function. The principles for prescribing and conducting physical conditioning programs to retard the aging process are included. Cross list with EXS 5200. (Formerly EXS 445). Offered summer term.
Prerequisite(s): (EXS 3010 or EXS 304) and (EXS 3020 or EXS 350)

EXS 4210 - Children and Exercise

(2) Physical activity and the growth, maturation, motor development, and motor learning of children from birth through adolescence. Skill and performance enhancement, exercise program design, biomechanics, and injury and disease prevention are discussed. Cross list with EXS 5210. Offered summer term in odd-numbered years. (Formerly EXS 450)
Prerequisite(s): (EXS 3010 or EXS 304) and (EXS 3020 or EXS 350

EXS 4300 - Human Performance Enhancement

(2) Advanced topics and trends in modern strength and conditioning program design and implementation. Topics include muscle physiology, neuromuscular physiology, performance, profiles, periodization, and the theory behind developing adequate strength, mass, flexibility, power, and stability programs. (Formerly EXS 403) Credit will not be awarded for both (EXS 4300 or EXS 403) and (EXS 5300 or EXS 503). Cross list with (EXS 5300 or EXS 503)
Prerequisite(s): (EXS 1000 or EXS 103) or instructor permission.

EXS 4310 - Environment and Human Performance

(2) Human adaptation to major factors that can significantly influence human movement in diverse micro- and macro-environments, including temperature, altitude, precipitation, light, noise and socio-cultural factors. Cross list with (EXS 5310 or EXS 536). (Formerly EXS 436)
Prerequisite(s): (EXS 3010 or EXS 304)

EXS 4320 - Prevention of Injury and Sudden Death in Sport and Physical Activity

(2) An examination of unintentional traumatic, non-fatal injuries; plus fatal catastrophic injuries in the athletic population; including epidemiology, etiology, risk factors, prevention, pathophysiology, recognition, assessment, intervention, recovery and return to play factors. Equivalent to (WHP 432 or WHP 4320).
Prerequisite(s): (WRT 160 or WRT 1060) and (HS 201 or HS 2000) or (WHP 310 or WHP 3850) preferred, or instructor permission.

EXS 4400 - Obesity and Physical Activity

(2) Obesity is a complex disease with myriad contributing factors. This course addresses the causes, prevention, and treatment of obesity, with particular emphasis on the role of physical activity. Metabolism, energy balance, and social, psychological, mechanical, and behavioral issues are discussed. Cross list with (EXS 5400 or EXS 541). (Formerly EXS 441)
Pre/Corequisite(s): (EXS 3010 or EXS 304)

EXS 4500 - Healthy Lifestyle Choices

(2)A biopsychosocial approach to exercise and other healthy lifestyle choices. Focus is on the dimensions of wellness, factors influencing lifestyle choices, the theory and practice of behavior change, and health promotion concepts. Cross list with (EXS 5500 or EXS 560). (Formerly EXS 460)
Prerequisite(s): (PSY 1100 or PSY 100), (EXS 2400 or EXS 204); or (EXS 3010 or EXS 304) or (HS 2000 or HS 201)

EXS 4600 - Health and Disease

(2) Examination of the health and medical record with a focus on the history, physical exam, and laboratory and imaging studies. The pathogenesis of representative diseases that are lifestyle related are emphasized. Credit will not be granted for both (EXS 4600 or EXS 405) and (EXS 5600 or EXS 505). Cross list with (EXS 5600 or EXS 505). Offered summer semester. (Formerly EXS 405)
Prerequisite(s): (BIO 1200 or BIO 111) and (BIO 2600 or BIO 207) or instructor permission. (BIO 2100 or BIO 205) recommended.

EXS 4620 - Clinical Biomechanics

(2) The pathomechanics of the human musculoskeletal system. Topics include properties of human tissue, mechanisms of injury, pathokinesiology, and principles of musculoskeletal exercise prescription. (Formerly EXS 411) Credit will not be granted for both (EXS 4620 or EXS 411) and (EXS 5620 or EXS 511). Cross list with (EXS 5620 or EXS 511).
Pre/Corequisite(s): (EXS 3020 or EXS 350).

EXS 4630 - Basic Athletic Training

(2) Course directed to competitive sports and the recognition and immediate care of athletic injuries. Evaluation and treatment procedures and techniques are presented and practiced. Identical with (PT 4630 or PT 421). Cross list with EXS (5630 or EXS 521). (Formerly EXS 421).
Prerequisite(s): (BIO 2100 or BIO 205), (BIO 2600 or BIO 207), (EXS 3020 or EXS 350).

EXS 4640 - Exercise Electrocardiography

(2) Theoretical and applied concepts of resting and exercise electrocardiography (ECG), the normal ECG, and factors contributing to abnormal ECG. Students experience exercise test applications of the ECG and learn to recognize life-threatening arrhythmias. (Formerly EXS 426). Cross list with (EXS 5640 or EXS 526). Offered summer semester.
Prerequisite(s): (EXS 3010 or EXS 304)

EXS 4700 - Corporate and Worksite Wellness Programs

(2) Concepts underlying corporate and worksite health promotion programs, including: health and exercise program planning, facility planning and design, program management, staffing, equipment selection, safety and legal issues, and marketing. Cross list with (EXS 5700 or EXS 565). (Formerly EXS 465) Offered summer semester.
Prerequisite(s): (EXS 3010 or EXS 304) or instructor permission.

EXS 4715 - Integrated Laboratory in Exercise Science

(3) This course has three main objectives: 1) Provide students experience with equipment and measurements in exercise science; 2) Integrate core courses in a laboratory setting; 3) Engage in appropriate communication of laboratory work through writing and speaking based on the different formats of scientific reporting as practiced in exercise science.
Prerequisite(s): EXS 3010 (C+) and EXS 3020 (C+)
Corequisite(s): EXS 3030 or instructor permission.

EXS 4800 - Exercise Endocrinology

(2)A cellular and systems physiology approach to human hormone function during exercise. Interaction of neuro-endocrine responses during exercise and body fluid regulation, hemostasis, the immune system, regulation of fuel use, biological rhythms, reproductive cycles, analgesia, and tissue repair. Hormones as ergogenic aids. (Formerly EXS 415). Cross list with (EXS 5800 or EXS 515).
Prerequisite(s): (BIO 2600 or BIO 207) and (EXS 3010 or EXS 304) or have permission of instructor.

EXS 4810 - Physical Activity Epidemiology

(2) Explores the evolution of epidemiology and its impact on physical activity choices and guidelines. Topics will include the role of physical activity in the primary, secondary and tertiary prevention of chronic disease, mental health problems, and disability from an epidemiologic perspective. Offered Summer semester. Cross list with (EXS 5810 or EXS 516). (Formerly EXS 416)
Prerequisite(s): (STA 2220 or STA 225) or (PSY 2510 or PSY 251)

EXS 4900 - Special Topics

(1 TO 4) An advanced course involving study of current topics in the practical application of exercise principles. Topics vary. May be repeated for additional credit. (Formerly EXS 483)
Prerequisite(s): program director permission.

EXS 4960 - Practicum in Exercise Science

(5) Supervised exercise science experience in a program-approved setting with application of HS/EXS and general education knowledge. Students demonstrate exercise science competencies, keep a daily journal, write a critical analysis of the experience, and successfully pass site supervisor evaluation. *Satisfies the university general education requirement for the capstone experience. All semesters. (Formerly EXS 401)*
Prerequisite(s): (HS 2000 or HS 201), (EXS 3010 or EXS 304), (EXS 3020 or EXS 350), completion of general education knowledge foundation courses, and EXS program director permission.

EXS 4995 - Directed Study and Research

(1 TO 4) Special study areas and research in exercise science. May be repeated for additional credit. Offered every semester. (Formerly EXS 493)
Prerequisite(s): program permission.

APPENDIX E BUDGET

The budget is in a separate attachment.

APPENDIX F
Letters of Support

OAKLAND UNIVERSITY

School of Health Sciences

Oakland University
Department of Academic Affairs

September 24, 2018

RE: Letter of Support for the Bachelor of Science In Exercise Science program proposal

Dear Colleagues,

It is with great enthusiasm that I write to express support for this proposal.

First, I commend the team of faculty and staff members who contributed to the state-of-the-art design of this proposed new Bachelor of Science in Exercise Science (BSES) program. In particular, Drs. Kris Thompson (Associate Professor and Chair, Human Movement Science) and Charles Marks (Associate Professor and Director, Graduate Exercise Science program) deserve distinct recognition for their outstanding organizational efforts in leading this group.

The BSES program is long awaited, and given the exciting growth of the Exercise Science discipline at OU, it is destined for success.

It was during the actual formation of the School of Health Sciences (SHS), more than 40 years ago, that the first program in exercise science, the Master of Science in Exercise Science (MSES) was founded. This program gained immediate successes advancing the (then) burgeoning field of cardiac rehabilitation. It was also in the late 1970's that the Physical Therapy (PT) program was established in SHS, originally as a Bachelor's degree. Today, the Doctor of PT program (DPT) at OU is widely acclaimed across Michigan for its professional and academic excellence, and interestingly, across the country, the exercise science bachelor's has become the degree of choice for DPT qualification (pre-PT education). Simultaneously, within the exercise science discipline, the opportunities for exciting pursuits through undergraduate degree preparation, have grown to include careers in fitness, wellness, recreation, community leadership, coaching, marketing, sports science, as well as the provision of qualifying entry into further graduate and professional education programs, for careers in physical rehabilitation and other related health fields.

And yet for more than 40 years, at the actual entry point of University undergraduate admissions at OU, the exercise science discipline (and a Pre-PT track) have not been available for a single student to choose. Instead, all past and current Exercise Science and Pre-PT students at OU, have been required to choose the BS in Health Sciences (BSHS) major and then to select their preferred concentration.

Unfortunately this two-step process has been limiting.

Human Health Building | 433 Meadow Brook Road, Rochester, Michigan 48309-4452
(248) 370-3562

With about 1500 students, the BSHS is presently amongst the largest single majors at OU, of which more than 400 students are now selecting the Pre-PT and the Exercise Science concentrations. Because the Exercise Science faculty complement was originally allocated to serve the MSES program, the resource demands placed upon the faculty have become unwieldy. Our Exercise Science Faculty members have responded admirably, however the curriculum we are able to deliver is being curtailed. In particular, the highly desired (by students) experiential learning opportunities such as laboratory and research experiences have not been fully offered. As such our "concentration" graduates have been receiving exercise science education that more closely equates to a minor, and unfortunately some graduates are now reporting some difficulties in qualifying for direct enter into post-professional programs for this reason.

Once positioned alongside our core BSHS major, the new BSES degree program in SHS, is sure to provide OU with many successes — and perhaps surprisingly, even with over 400 students from the BSHS shifting into the new BSES program, the BSHS program will still be required to serve about 1100 students. With its current seven full-time faculty member complement, the core BS in Health Sciences degree, will itself be able to yield academic improvements, as a result of moving towards "right-sizing" its own student to faculty ratio.

The introduction of the BSES program will allow SHS to prepare all exercise science (and pre-PT) graduates with an ever stronger education designed competitively to match or exceed disciplinary norms. The new BSES program (and Pre-PT track), being made available within the range of programs marketed at Admissions, will help us to competitively attract even greater numbers of students to OU. We project that well over 100 new full-time undergraduates (at least 25 per year) will choose our BSES over another University's offering. As such, with the BSHS concentrations being discontinued, our resulting population of over 500 BSES students should soon rank amongst the larger undergraduate programs on campus. Finally, the addition of the BSES degree program, built upon the strong faculty and laboratory underpinnings of our MSES and DPT programs, will help through the acquisition of new earned resources, to bolster our strengths in advancing meaningful research, service, and teaching at the undergraduate, graduate, and even post-professional levels of higher education.

As described, the BSES program is long awaited. This academic strengthening will help us to prepare even more future graduates in pursuit of wonderful careers in Human Movement Science through exercise science — our motto, "helping to advance and restore physical function". We are excited to begin.

Sincerely,

Kevin Arthur Ball, PhD
Dean and Professor, School of Health Sciences

C: Kris Thompson
Charles Marks

OAKLAND UNIVERSITY

School of Health Sciences

October 9, 2018

Kristine Thompson, PT PhD
Chair, Department of Human Movement Sciences
433 Meadowbrook Road
Rochester, MI 48309-4452

Dear Dr. Thompson,

I have reviewed the proposal for a new undergraduate degree in Exercise Science (EXS). I strongly support this new degree because it complements the other degrees in the School of Health Sciences. Furthermore, the minor in Wellness and Health Promotion would be a good option and work well for the EXS students, especially those who plan on working in settings that have a health promotion and wellness focus. Lastly, the new degree in EXS will attract new students who may choose to obtain their graduate degrees in Physical Therapy or Public Health, for example.

I am enthusiastic about the start of this new degree in EXS. I trust it will increase the University's and School's visibility and enhance the School's reputation as a leader in Health Sciences.

Sincerely,

Florence Dallo

Flora Dallo, PhD MPH
Chair, Department of Public and Environmental Wellness

OAKLAND UNIVERSITY

School of Health Sciences

Kris Thompson, PT, PhD
Associate Professor and Chair
Human Movement Science Department
School of Health Sciences
Oakland University

October 23, 2018

RE: Proposal for B.S. in Exercise Sciences

Dear Dr. Thompson,

It is with pleasure that I write this letter in support of the proposed B.S. in Exercise Science degree put forth to Oakland University. The proposed degree will replace the B.S. in Health Sciences degree concentrations in Exercise Science and in Pre-Physical Therapy as a stand-alone major. As the Chair of the Department of Interdisciplinary Health Sciences, which currently oversees the B.S. in Health Science degree and associated concentrations, I am glad to see this curriculum and program being recognized on its own merits and fully support the move to an independent major.

The School of Health Sciences at Oakland University boasts a full slate of Exercise Science (EXS) coursework that prepares students for a variety of entry-level career options within the field as well as for graduate study in Physical Therapy or in our Masters of Exercise Science program. Having a specialized degree in Exercise Science makes it much easier for prospective students to find the appropriate degree, and thus more likely to choose Oakland University. Furthermore, potential employers will now see students graduating with their degree in Exercise Science, rather than the more generic Health Science degree, better connecting students with job opportunities.

Currently, the Department of Human Movement Sciences has a number of highly qualified EXS faculty delivering the core curriculum, supplemented with many experts serving as part-time faculty. The Human Health Building contains adequate facilities to support the hands-on learning labs required within the exercise science curriculum.

Thank you for your hard work in preparing a detailed proposal that outlines the merits of the program and the qualifications of your faculty. I look forward to seeing the new major begin!

Jennifer Lucarelli

Chair, Interdisciplinary Health Sciences

Memorandum

Oakland University

To: Kristin Thompson, PhD, Chair
Human Movement Science

From: Michelle D. Southward, Director of Academic Advising and Student Services
School of Health Sciences

Date: October 22, 2018
Re: Support for the Bachelor of Science in Exercise Science

The professional academic advising office within the School of Health Sciences fully supports the proposal for the Bachelor of Science in Exercise Science. All of the members of our academic advising team were provided an opportunity to review and reflect on the proposal. The academic advising team members were all present during the School assembly meeting where the documents were presented and supported by the school.

The professional academic advising team, stands in agreement that this change would undeniably benefit both our current and future students. The new major would better prepare our students academically and professionally as well as reflect their long term career goals and aspirations.

The advising office worked in partnership with the faculty within the Department of Human Movement Science to review the program curriculum. We have appreciated being invited to participate in their process.

Often times at recruitment events, prospective students asked if the university has a major in Exercise Science. We are excited that this opportunity will be afforded to our students and we are looking forward to the possibility of being able to recruit future students into this new major.

DETROIT ATHLETIC CLUB

241 MADISON AVENUE, DETROIT, MI 48226

October 16, 2018
Oakland University
Department of Human Movement Sciences
Letter of Support
BS Major in EXS

Dr. Marks,

It is my pleasure to support the BS Major in Exercise Science program at Oakland University. I received my Masters in Exercise Science at Oakland University in the winter of 2015. I have spent the better part of the decade working in both clinical and non-clinical exercise science settings. Within those realms, I have experience training all three phases of cardiac rehab, conducting stress tests, as well as training high school, college and professional athletes. After graduating I was juggling several jobs within the fitness industry. Within a short time span I was promoted to Athletic Development Director at the Detroit Athletic Club. This past year I was promoted further to Sports Director.

The last several years has seen an explosion of social media within the fitness industry. Unfortunately, this exposure has given a platform for undereducated exercise enthusiasts to spread misinformation among the industry. I believe this pseudo-science epidemic has become a detriment to both clinical and non-clinical aspects of our beloved field. It is our responsibility, as movement science leaders, to provide direction and proper educational guidance to the future generations of exercise and wellness professionals.

Furthermore, with the heightened exposure of fitness, wellness and health-related content we can infer that a demand for professionals within the industry is, and will continue to be, on the rise.

In my opinion, a student graduating with a BS degree would have a much better opportunity to be employed, to go on to graduate school, to receive certifications within the industry, and to ultimately become a positive contributor to the fitness and exercise science community.

Sincerely,

Steve Grapsas, MS, CSCS
Sports Director
DETROIT ATHLETIC CLUB
241 Madison | Detroit, Michigan 48226
(313)442-1081 | steveg@thedac.com

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October 16, 2018

Charles R.C. Marks, Ph.D.
Associate Professor, Exercise Science Program Director
Department of Human Movement Sciences
School of Health Sciences, Oakland University
Rochester, MI

Dear Dr. Marks:

It is with great pleasure that I am enthusiastically endorse the establishment of an undergraduate major in Exercise Science at Oakland University. Your decision to advance the undergraduate concentration in exercise science to a major is consistent with the increase in demand for qualified individuals who are able to work in exercise-related professions. As a long time adjunct faculty in the School of Health Sciences, one who taught a graduate-level class for many years, the decision to establish an exercise science undergraduate major will also do much to strengthen the quality of students who go on to pursue graduate work at Oakland University (and other institutions).

Again, please accept my unequivocal support for the establishment of an undergraduate major in Exercise Science at Oakland University. Your vision and work effort to establish this program will help drive its success in the future.

Please contact me if you have any questions.

Sincerely

Steven Keteyian, PhD
Director, Preventive Cardiology
Henry Ford Hospital

Beaumont

Beaumont Hospital, Troy
44201 Dequindre Road
Troy, MI 48085

Kris Thompson, PT, PhD
Associate Professor and Chair
Human Movement Science Department
School of Health Sciences
433 Meadow Brook Rd.
Oakland University
Rochester MI, 48309

Dear Kris,

I am writing this letter in support of the newly developed program "Bachelors of Science in Exercise" at Oakland University. This program adds value to the communities surrounding Oakland University and the State in general. It aims to educate future professionals in the areas of wellness and fitness, in addition, it will prepare students to advance their professional careers toward graduate degrees, such as exercise science and doctor in physical therapy.

Health Care changes, are emphasizing the important of wellness. Research demonstrates that clinicians in value –based care agreements encourage patients' wellness by recommending patients to set their own wellness goals and support them by offering them resources to access programs that promote fitness and personal training. Graduates from the Bachelors of Science in Exercise will be well positioned to serve the demands from payers, employers and consumer who desire improvement in quality of life. This bachelor program will also energize students who seek professions that promote healthy living that make a contribution to society.

The Bachelors of Science in Exercise at OU, will prepare students to promote wellness and fitness among the health care industry, payers and evolving labor markets where employees are expecting expanded employee wellness programs as part of their benefits.

Lastly, the Bachelors of Science in Exercise will provide an excellent foundation for students who will advance to the doctoral program of physical therapy. The curriculum of the BS program includes classes such as motor control, exercise physiology, biomechanics and nutrition. These courses will expand and add strength to the professional career of future physical therapists.

Reyna Colombo

Reyna Colombo, MA, PT
Director of Rehabilitation Services,
Beaumont Hospital -Troy
44300 Dequindre Road
Sterling Heights, MI 48314
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OAKLAND
COUNTY MICHIGAN
HEALTH & HUMAN SERVICES

OAKLAND COUNTY EXECUTIVE L. BROOKS PATTERSON

Kathy Forzley, Director
(248) 858-1293 | forzleyk@oakgov.com

Dr. Kristine Thompson
Chair of Human Movement Science
Oakland University School of Health Sciences
433 Meadowbrook Dr.
Rochester, MI 48309-4452

October 2, 2018

RE: Support for proposed Bachelor of Science in Exercise

Dear Dr. Thompson,

It is with great pleasure that I write this letter of support for Oakland University's School of Health Sciences' proposal for a Bachelor of Science in Exercise degree. As the Director of Oakland County's Department of Health and Human Services, I oversee the Health Division's community health and improvement initiative, known as ECHO (Energizing Connections for a Healthier Oakland). ECHO is a community wide, data driven collaborative to support health improvement through the implementation of a Community Health Improvement Plan. One of the 5 strategies included in this plan to improve the overall health of the community is active living. As a result, movement and exercise is a high priority for more than 100 community partners that have joined the ECHO initiative. The addition of the Bachelor of Science in Exercise degree at Oakland University would be an important asset to support this community wide initiative to improve health.

I am confident that the Bachelor of Science in Exercise degree at Oakland University would provide important preparation for students entering the health, wellness and fitness field or provide additional opportunities to go on to graduate studies in exercise science, movement science or professional healthcare programs, such as the physical therapy. These students will be well prepared to support the needed emphasis on exercise and movement to improve mobility throughout the span of life. As we prepare for an aging population it is imperative to integrate exercise as early as possible to cultivate the lifelong benefits of movement. As such, I wholeheartedly support the addition of this needed program to promote health in our community and beyond.

Please don't hesitate to contact me if I can provide additional information or answer any questions pertaining to my support of this important degree.

Sincerely,

OAKLAND COUNTY HEALTH DIVISION
Department of Health and Human Services

Kathleen Forzley, R.S., M.P.A.
Director

AUBURN HILLS

October 12, 2018

Dr. Kris Thompson, PT, PhD
Associate Professor and Chair
Human Movement Science Department
School of Health Sciences
433 Meadow Brook Rd.
Oakland University
Rochester, MI 48309

As the Director of the Senior Services Department for the City of Auburn Hills I am writing this letter of support for the proposed Bachelors of Science in Exercise Degree at Oakland University.

The City of Auburn Hills is a distinguished leader in southeast Michigan, known not only for its 22 high-technology parks but also for having world-renowned retail, entertainment, and manufacturing. Home to more than 23,000 residents, it also serves as Michigan's global business address, with 40 international corporations from 32 countries, including many world and North American headquarters. Auburn Hills' residents enjoy the amenities of city and suburban living with parks, a revitalized downtown district, and a welcoming city complex with a library and community center.

Additionally, the city has four colleges and universities, and Great Lakes Crossing Outlets, one of the state's largest destination shopping centers, providing a variety of cultural, social and educational opportunities to residents, workers, and visitors.

The City of Auburn Hills has also been a leader in the field of aging, being the first in the State of Michigan and 14th in the country to be recognized as a Livable Community by AARP and The WHO, as well as designated as a Community for a Lifetime by the State of Michigan.

The City of Auburn Hills Senior Services Department is dedicated to enhancing the Quality of Life of adults 55+ through health, wellness, enrichment and supportive services, programs and resources.

Active aging is important for the overall wellbeing of older adults. Research shows that as older adults age, maintaining a healthy lifestyle can help with some of the issues older adults face including management of chronic diseases, mobility issues, mental health and nutrition.

The population of the US is aging, and in Michigan by 2035 there will be more adults over the age of 65 than under 18 and in Oakland County it is predicated that we will hit that milestone 10 years sooner than the rest of the state.

SENIOR SERVICES DEPARTMENT
1827 N. Squirrel Road
Auburn Hills, Michigan 48326

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This dramatic demographic shift is already changing how health care is being provided. Today there is an even greater need for highly trained professionals in the fields of Geriatrics or Physical Therapy and in Exercise Science.

We have a great relationship with Oakland University, including some wonderful research projects with the Physical Therapy Department and I believe there may be opportunity for partnership with students in the Exercise Science program and the City of Auburn Hills Senior Services Department.

Oakland University is a gem in our community and the addition of the Bachelors of Science in Exercise indicates the excellent progressive thinking that Oakland University is well known for.

I believe that students who graduate with a Degree in Exercise Science will have a diversified education that will prepare them for the next step in their health care profession.

As I stated in the beginning, I am very supportive of this venture, and wish only the best for the future students in the Exercise Science program.

Sincerely,

Karen S Adcock, SDC
Director of Senior Services

APPENDIX G
Full-time EXS Faculty CVs

Curriculum Vitae - Daniel J. Goble

(revised 6/2018)

School of Health Sciences
Oakland University
433 Meadow Brook Rd, Rochester, MI, 48309-4452

E-mail: dgoble@oakland.edu

Phone: 248-364-8688

Education

2007	**UNIVERSITY OF MICHIGAN**, Ann Arbor, MI, USA
	PhD Kinesiology
	Concentration – Human Motor Control
	Dissertation Title: 'Upper Limb Asymmetries in the Utilization of Sensory Feedback for Goal-directed Movement'
2002	**UNIVERSITY OF WINDSOR**, Windsor, ON, CAN
	Masters of Human Kinetics
	Concentration – Applied Human Performance
	Theses Title: 'The influence of horizontal velocity on bilateral gait symmetry'
2000	**UNIVERSITY OF WINDSOR**, Windsor, ON, CAN
	Bachelor of Human Kinetics (Co-op with Honors)
	Concentration – Human Movement Science

Related Work Experience

09/17 – present	Associate Professor of Exercise Science, Oakland Univ, MI, USA
01/18 – present	Faculty Research Fellow, Oakland Univ, MI, USA
03/14 – present	Founder and CSO, Balance Tracking Systems, San Diego, CA, USA
05/16 – 08/17	Associate Professor of Exercise and Nutritional Sciences, San Diego State Univ, USA
01/12 – 04/16	Assistant Professor of Exercise and Nutritional Sciences, San Diego State Univ, USA
05/10 – 01/12	Visiting Scholar, Physical Medicine and Rehabilitation, Univ of Michigan, USA
01/08 – 04/10	Post-doctoral Research Fellow, Motor Control Laboratory, KU Leuven, BE
09/07 – 01/08	Post-doctoral Research Assistant, Motor Control Laboratory, Univ of Michigan, USA
09/02 – 08/07	Graduate Research Assistant, Motor Control Laboratory, Univ of Michigan,
01/01 – 06/02	Graduate Research Assistant, Biomechanics Laboratory, Univ of Windsor, CAN

Teaching Experience (Lecture-based Courses)

Oakland University, USA

01/18–present EXS 5020 – Biomechanics

(4 cr) (~30 students)

- Graduate course emphasizing the principles of mechanics applied to human motion

09/17–present EXS 3020 – Human Motion Analysis

(4 cr) (~30 students)

- Undergraduate course covering anatomical kinesiology and mechanical bases of movement

09/17–present EXS 4620 – Clinical Biomechanics

(2 cr) (~20 students)

- Undergraduate course on the pathomechanics of the human musculoskeletal system

San Diego State University, USA

08/15–05/17 ENS 307 – Motor Control, Learning and Performance

(3 cr) (~250 students)

- Undergraduate course on the neurophysiology of movement, learning of movement and movement-related disorders

01/13–05/16 ENS 610 – Biomechanical Techniques I

(3 cr) (~15 students)

- Graduate course dealing with the collection, analysis and presentation of movement kinematics data

01/12–12/16 ENS 611 – Biomechanical Techniques II

(3 cr) (~15 students)

- Graduate course dealing with the collection, analysis and presentation of movement kinetics data

08/12–12/15 ENS 612 – Biomechanical Techniques III

(3 cr) (~15 students)

- Graduate course dealing with the collection, analysis and presentation of EMG data

01/15–05/17 ENS 613 – Motor Control and Rehabilitation Science

(3 cr) (~15 students)

- Graduate seminar course dealing with the neurophysiology of movement and related movement disorders

University of Michigan, USA

09/05–12/07 MVS 320 – Motor Control Laboratory

(2 cr) (~35 students)

- Core undergraduate upper level course on human motor control focusing on applied concepts of motor function

09/04–04/05 MVS 110 – Motor Control Module

(3 cr) (~75 students)

- Core undergraduate introductory course on the neural control of human movement

09/02–04/04 MVS 110 – Biomechanics Module

(3 cr) (~75 students)

- Core undergraduate introductory course on the biomechanics of human movement

University of Windsor, CAN

01/02–05/04 95-380 – Biomechanics of Human Locomotion (Lab Section)

(2 cr) (~50 students)

- Undergraduate lab sections for course on applied biomechanics of human gait

Grants, Scholarships and Fellowships

Current Support

1. **Research Grant**
   Funding Source: University Research Committee, Oakland Univ, USA

   Title: An Initial Normative Database for the Clinical Test of Sensory Integration and Balance (CTSIB)

   Role: Principal Investigator

   Amount: $1,080

   Period: 03/18-03/19

   Aim: Provide an initial set of CTSIB norms for implementation in the BTrackS Assess Balance software.

2. **Research Grant**
   Funding Source: School of Health Sciences Research Committee, Oakland Univ, USA

   Title: An Initial Normative Database for the Clinical Test of Sensory Integration and Balance (CTSIB)

   Role: Principal Investigator

   Amount: $3,160

   Period: 05/18-06/19

   Aim: Provide an initial set of CTSIB norms for implementation in the BTrackS Assess Balance software.

3. **Research Grant**
   Funding Source: Summer Student Campus Corps (SSCC), Oakland Univ, USA

   Title: Expanding the Clinical Test of Sensory Integration and Balance (CTSIB) Normative Database

   Role: Principal Investigator

   Amount: $1,600

   Period: 05/18-08/18

   Aim: Provide set of CTSIB norms for middle aged adults to be implemented in BTrackS Assess Balance software.

Previous Sources of Support

1. **Research Grant**
   Funding Source: President's Leadership Fund – SDSU Campanile Foundation, USA

   Title: An Objective, Reliable and Accurate Solution for Fall Risk Assessment

   Role: Principal Investigator

   Amount: $8660

   Period: Indefinite (start: 01/15)

   Aim: Development of an affordable gold standard balance test to determine fall risk.

2. **Research Grant**
   Funding Source: Summer Undergraduate Research Program, San Diego State Univ, USA

   Title: Balance Tracking in Individuals with Stroke

   Role: Principal Investigator

   Amount: $3,000

   Period: 05/16 – 08/16

   Aim: Collect pilot data on individuals with stroke using the Balance Tracking System (BTrackS).

3. **Research Grant**
   Funding Source: Division of Undergraduate Studies, San Diego State Univ, USA

   Title: Creating a normative database for the Balance Tracking System (BTrackS)

   Role: Principal Investigator

   Amount: $1,000

Period: 02/16 – 05/16

Aim: Collect normative data to establish percentile rankings for the Balance Tracking System Balance Test (BBT).

4. **Fellowship**
Funding Source: Grants and Research Enterprise Writing (GREW), San Diego State Univ, USA

Amount: $3000

Period: 03/16 – 04/16

Aim: Assist in self-assessment and preparing of research career.

5. **Research Grant**
Funding Source: Summer Undergraduate Research Program, San Diego State Univ, USA

Title: Balance Tracking in Individuals with Disabilities

Role: Principal Investigator

Amount: $3,000

Period: 05/15 – 08/15

Aim: Collect pilot data on individuals with disabilities using the Balance Tracking System (BTrackS).

6. **Research Grant**
Funding Source: California State University Innovation Corps, National Science Foundation, USA

Title: Commercialization pathways for a concussion assessment device

Role: Principal Investigator

Amount: $2,500

Period: 03/15 – 07/15

Aim: Identify a promising product-market fit for the Balance Tracking System (BTrackS).

7. **Research Grant**
Funding Source: Division of Undergraduate Studies, San Diego State Univ, USA

Title: Effects of Fatigue on BTrackS balance assessment

Role: Principal Investigator

Amount: $1,000

Period: 08/14 – 05/15

Aim: Determine the influence of fatigue on balance scores determined using the Balance Tracking System (BTrackS).

8. **Research Grant**
Funding Source: University Grants Program – SDSU Provost Office, SDSU Research Foundation and Adams Humanities Endowment, USA

Title: Efficacy of the Balance Tracking System (B-TrackS) for quantifying concussion-related balance deficits.

Role: Principal Investigator

Amount: $9,987

Period: 18 months (start: 01/14)

Aim: Field-test BTrackS in ~ 200 athletes with elevated risk for concussion at San Diego State University.

9. **Research Grant**
Funding Source: President's Leadership Fund – SDSU Campanile Foundation, USA

Title: Commercialization of an Inexpensive Balance Assessment Device to Prevent and Diagnose Concussions

Role: Principal Investigator

Amount: $9,777

Period: Indefinite (start: 05/13)

Aim: Development of a low cost balance board to improve concussion-based balance testing.

10. **Sub-contract**
Funding Source: Elusis Benefit Corporation. USA

Title: Effects of LSD on Older Adults.

Role: Principal Investigator

Amount: $16,088

Period: 07/14 – 07/15

Aim: Measurement of balance and proprioception in response to microdoses of LSD.

11. **Research Grant**
Funding Source: Zahn Center for Innovation

Title: Zahn Challenge for Entrepreneurs

Role: Principal Investigator

Amount: $7,000

Period: Indefinite (start: 01/14)

Aim: Development of a balance tracking system (BTrackS) to improve balance testing.

12. Research Grant

Funding Source: National Skeletal Muscle Research Center, UCSD, USA

Title: Muscle spindle-related brain activity enhancement via balance training in the elderly

Role: Principal Investigator

Amount: $25,000

Period: 08/12-05-14

Aim: To determine behavioral and brain activity-based changes in ankle proprioception following 6 weeks of Wii Fit balance training in older adults.

13. Research Grant

Funding Source: University Grants Program – SDSU Provost Office, SDSU Research Foundation and Adams Humanities Endowment, USA

Title: Validity and Reliability of a Novel Device to Objectively Quantify Concussions

Role: Principal Investigator

Amount: $9,977

Period: 01/13-06/14

Aim: Validate a balance assessment device for Concussions that uses a Wii Balance Board.

14. Sub-contract

Funding Source: Leidos

Title: A Balance Tracking System (BTrackS) for measuring body sway during shooting.

Role: Principal Investigator

Amount: $15,789

Period: 01/13 – 04/13

Aim: Development of a center of pressure measurement device capable of recording body sway during rifle shooting.

15. Research Grant

Funding Source: University Grants Program – SDSU Provost Office, SDSU Research Foundation and Adams Humanities Endowment, USA

Title: Improving older adult balance via Wii Fit training: the role of proprioception

Role: Principal Investigator

Amount: $9,990

Period: 01/12-05/13

Aim: To determine whether improvement of balance following Wii Fit training by older adults is accompanied by improvement in ankle proprioception.

16. Research Grant

Funding Source: Scientific Fund for Research - Flanders (FWO), BE

Title: Aging and executive control mechanisms: neural structure-function relationships for inhibitory control of bimanual actions

Role: Co-investigator

Principal Investigator: Stephan P. Swinnen

Amount: 432,500 EUR

Period: 3 years (start: 11/09)

Aim: Address the processes involved in management of complex tasks, as well as the recruitment of inhibitory networks that become affected with aging.

17. Sub-contract

Funding Source: Reflexion Health, USA

Title: Comparing motion capture data from a Kinect Camera with an advanced 3D capture system

Role: Principal Investigator

Amount: $5,547

Period: 01/13 – 01/13

Aim: Validity testing of at home rehabilitation device.

18. Post-doctoral Fellowship

Funding Source: Canadian Institutes of Health Research – Institutes of Aging, CAN

Mentors: Stephan P. Swinnen (Initial), Edward A. Hurvitz (Secondary)

Amount: Salary +5000 CAD/year operating budget

Period: 04/10 – 01/12

Aim: Determination of age-related differences in proprioception-related neural functioning.

19. Post-doctoral Fellowship

Funding Source: Scientific Fund for Research - Flanders (FWO), BE

Mentor: Stephan P. Swinnen

Amount: Salary + 4000 EUR/year operating budget

Period: 10/09 – 04/10

Aim: Quantify age-related differences in proprioception-related neural functioning.

20. Post-doctoral Fellowship
Funding Source: K.U. Leuven Research Fund, BE

Mentor: Stephan P. Swinnen

Amount: Salary

Period: 01/09 – 09/09

Aim: Characterize the effects of aging on upper limb proprioceptive functioning as they relate to brain activation in the elderly.

21. Post-doctoral Fellowship
Funding Source: Scientific Fund for Research - Flanders (FWO), BE

Mentor: Stephan P. Swinnen

Amount: Salary

Period: 01/08 – 01/09

Aim: Determine relationship between upper limb coordination and brain activation in the elderly using functional magnetic resonance imaging (fMRI).

22. Pre-doctoral Fellowship
Funding Source: Rackham Graduate School, Univ of Michigan, USA

Mentor: Susan H. Brown

Amount: Salary + tuition

Period: 05/06 – 04/07

Aim: Conduct dissertation research involving upper limb asymmetries in the utilization of different types of sensory feedback.

23. PhD Fellowship
Funding Source: Division of Kinesiology, Univ of Michigan, USA

Mentor: Susan H. Brown

Amount: Salary + tuition

Period: 09/02 – 05/06

Aim: Study and conduct research in the area of human movement science with an emphasis on upper limb motor control.

24. Student Grant

Funding Source: Blue Cross Blue Shield of Michigan, USA

Role: Principal Investigator

Amount: 3,000 USD operating budget

Period: 05/03 – 08/04

Aim: Quantitatively assess the motor and sensory contributions to bilateral movement of the upper extremities in children with spastic hemiparesis.

25. Spring/Summer Fellowship

Funding Source: Division of Kinesiology, Univ of Michigan, USA

Mentor: Susan H. Brown

Amount: Salary + tuition

Period: 09/02 – 05/06

Aim: Conduct research comparing reaching in children with brachial plexus palsy and cerebral palsy.

26. Ontario Graduate Scholarship (Science and Technology)

Funding Source: Ministry of Training, Colleges and Universities, CAN

Mentor: G. Wayne Marino

Amount: Salary + tuition

Period: 09/02 – 09/03

Aim: Study and conduct post-thesis research on biomechanics of normal walking gait.

27. Ontario Graduate Scholarship (Science and Technology)

Funding Source: Ministry of Training, Colleges and Universities, CAN

Mentor: G. Wayne Marino

Amount: Salary + tuition

Period: 01/01 – 08/02

Aim: Study and conduct thesis research on human biomechanics of walking gait.

Research Publications and Review Articles (refereed journals)

1. **Goble DJ**, Baweja HS. (in press). Postural Sway Normative Data across the Adult Lifespan: Results from 6,280 individuals on the BTrackS™ Balance Test. *Geriatr Gerontol Int*.

2. **Goble DJ**, Baweja HS. (in press). Normative Data for the BTrackS™ Balance Test of Postural Sway: Results from 16,357 Community-Dwelling Individuals Aged 5-100 Years. *Phys Ther*.

3. Richmond SB, Dames KD, **Goble DJ**, Fling BW. (in press). Leveling the Playing Field: Evaluation of a Portable Instrument for Quantifying Balance Performance. *J Biomech*.

4. Levy SS, Thralls KJ, **Goble DJ**, Krippes TB. (in press). Effects of a Community-based Exercise Program on Older Adults' Physical Function, Activities of Daily Living, and Exercise Self-efficacy: Feeling Fit Club. *J Appl Gerontol.*

5. **Goble DJ**, Khan E, Baweja HS, O'Connor SM. (2018). A Point of Application Study to Determine the Accuracy, Precision and Reliability of a Low-cost Balance Plate for Center of Pressure Measurement. *J Biomech 71:277-280.*

6. Hearn M, Levy S, Baweja S, **Goble DJ**. (2018). The BTrackS Balance Test for Concussion Management is Resistant to Practice Effects. *Clin J Sport Med 28:177-179*.

7. **Goble DJ**, Hearn M, Baweja S. (2017). Using the Balance Tracking System and Geri-Fit as a targeted approach for assessing and reducing the postural sway of older adults with high fall risk. *Clin Interv Aging 12: 351-357.*

8. Benedict S, Hinshaw JW, Byron-Fields R, Baweja HS, **Goble DJ**. (2017). Effects of Fatigue on the BTrackS Balance Test for Concussion Management. *Int J Athl Ther Train 22:23-28*.

9. Domingo A. Diek M, Maluf K. Goble KM, **Goble DJ**, Baweja HS. (2017). Short Duration Therapeutic Massage reduces Postural Upper Trapezius Muscle Activity. *NeuroReport 28: 108-110.*

10. Cone, BL, **Goble DJ**, Rhea CK. (2017). Relationship between changes in vestibular sensory reweighting and postural control complexity. *Exp Brain Res 235:547=554.*

11. O'Connor SO, Baweja HS, **Goble DJ**. (2016). Validation of the BTrackS Balance Plate as a low cost alternative for the measurement of sway-induced center of pressure. *J Biomech 49: 4142-4145.*

12. **Goble DJ**, Manyak KA, Abdenour TE, Rauh MJ, Baweja HS. (2016). An initial evaluation of the BTrackS Balance Plate and Sports Balance Software for Concussion Diagnosis. *Int J Sport Phys Ther 11(2):149-155.*

13. Craig CE, **Goble DJ**, Doumas M. (2016). Proprioceptive acuity predicts muscle co-contraction of the tibialis anterior and gastrocnemius medialis in older adults' dynamic postural control. *Neurosci 322:251-261.*

14. Coxon JP, **Goble DJ**, Leunissen I, Van Impe A, Wenderoth N, Swinnen SP. (2016). Functional Brain Activation Associated with Inhibitory Control Deficits in Older Adults. *Cereb Cortex 26(1):12-22.*

15. Cone BL, Levy SS, **Goble DJ**. (2015). Wii Fit exer-game training improves sensory weighting and dynamic balance in healthy young adults. *Gait Posture 41(2):711-715*.

16. Graham SA, Abbott AE, Lincoln AJ, Mueller RA, **Goble DJ**. (2015). The influence of task difficulty and participant age on balance control in ASD. *J Autism and Dev Disorder 45(5):1419-1427.*

17. Gonzales TI, **Goble DJ.** (2014). Short-term adaptation of joint position sense occurs during and after sustained vibration of antagonistic muscle pairs. *Front Hum Neurosci 8:896*.

18. Komatireddy R, Choskshi A, Basnett J, Casale M, **Goble DJ**, Shubert TE. (2014). Quality and quantity of rehabilitation exercises delivered by a 3-D motion controlled camera: A pilot study. *Int J Phys Med Rehab 2:4*.

19. Chang JO, Levy S, Seay S, **Goble DJ**. (2014). An alternative to the Balance Error Scoring System: Using a low-cost balance board to improve the Validity/Reliability of sports-related concussion balance testing. *Clin J Sport Med 24(3):256-262.*

20. **Goble DJ**, Cone BL, Thurman J, Corey-Bloom J. (2014). Balance declines may predict relapse onset in Multiple Sclerosis – a case study. *J Dev Phys Disabil 26(2):145-150*.

21. **Goble DJ**, Cone BL, Fling BW. (2014). Using the Wii Fit as a tool for balance assessment and neurorehabilitation: the first half decade of "Wii-search". *J Neuroeng Rehabil 11:12*.

22. Heitger MH, **Goble DJ**, Dhollander T, Dupont P, Swinnen SP. (2013). Bimanual motor coordination in older adults is associated with increased functional brain connectivity – a graph-theoretical analysis. *PLOS ONE 8(4):e621133.*

23. **Goble DJ**, Aaron MB, Warschausky S, Kaufman J, Hurvitz EA. (2012). The influence of spatial working memory on ipsilateral remembered proprioceptive matching in adults with cerebral palsy. *Exp Brain Res 223(2):259-269.*

24. **Goble DJ**, Mousigian M, Brown SB. (2012). Compromised encoding of proprioceptively determined joint positions in older adults: The role of working memory and cognitive loading. *Exp Brain Res 216(1):35-40*.

25. **Goble DJ**, Coxon JP, Van Impe A, Guerts M, Van Hecke W, Sunaert S, Wenderoth N, Swinnen SP. (2012). The neural basis of central proprioceptive processing in older versus younger adults: an important sensory role for right putamen. *Hum Brain Mapp 33(4):895-908*.

26. Van Impe A, Coxon JP, **Goble DJ**, Doumas M, Swinnen SP. (2012). White matter fractional anisotropy predicts balance performance in older adults. *Neurobiol Aging 33(9):1900-1912*.

27. **Goble DJ**, Coxon JP, Van Impe A, Guerts M, Doumas M, Wenderoth N, Swinnen SP. (2011). Brain activity during ankle proprioceptive stimulation predicts balance performance in young and older adults. *J Neurosci 31(45):16344-16352*.

28. Van Impe A, Coxon JP, **Goble DJ**, Wenderoth N, Swinnen SP. (2011). Age-related changes in brain activation underlying single- and dual-task performance: visuomanual drawing and mental arithmetic. *Neuropsychologia 49(9): 2400-2409.*

29. Ronsse R, Puttemans v, Coxon JP, **Goble DJ**, Wagemans J, Wenderoth N, Swinnen SP. (2011). Motor learning with augmented feedback: modality dependent behavioral and neural consequences. *Cereb Cortex*, *21(6):1283-1294*.

30. **Goble DJ**, Anguera JA. (2010). Plastic changes in hand proprioception following force-field motor learning. *J Neurophysiol 104:1213-1215*.

31. **Coxon JP,** Goble DJ**, Van Impe A, Wenderoth N, Swinnen SP. (2010). Reduced basal ganglia function when elderly switch between coordinated movement patterns. *Cereb Cortex, 20*:2368-2379.**

32. **Goble DJ**, Noble BC, Brown SH (2010). Where was my arm again? Memory-based matching of proprioceptive targets is enhanced by increased target presentation time. *Neurosci Lett 48*(1):54-58.

33. Goble DJ. **(2010). Assessment of proprioceptive acuity via joint position matching: From basic science to general practice. *Phys Ther 90*(8):1176-1184.**

34. **Goble DJ**, Coxon JP, Van Impe A, De Vos J, Wenderoth N, Swinnen SP. (2010). The neural control of bimanual movements in the elderly: brain regions exhibiting overactivation, compensation and frequency induced neural modulation. *Hum Brain Mapp 31*(8):1281-1295.

35. **Goble DJ**, Brown SB. (2010). Upper limb asymmetries in the proprioceptively-guided matching of dynamic position. *J Exp Psychol – Hum Percept Perf 36*(3):768-775.

36. Swinnen SP, Vangheluwe S, Wagemans J, Coxon JP, **Goble DJ**, Van Impe A, Sunaert S, Peeters R, Wenderoth N. (2010). Shared neural resources between left and right interlimb coordination skills: the neural substrate of abstract motor representations. *Neuroimage 49*(3):2570-2580.

37. **Goble DJ**, Hurvitz EA, Brown SH. (2009). Deficits in the ability to utilize proprioceptive feedback in children with hemiplegic cerebral palsy. *Int J Rehabil Res 32*(3): 267-269.

38. **Goble DJ**, Noble BC, Brown SB. (2009). Proprioceptive position matching asymmetries in left-handed individuals: Effects of processing demands and target amplitude. *Exp Brain Res 197*(4):403-408.

39. Van Impe A, Coxon JP, **Goble DJ**, Wenderoth N, Swinnen SP. (2009). Ipsilateral coordination at preferred rate: Effects of age, body side and task complexity. *Neuroimage 47*(4):1854-62.

40. **Goble DJ**, Brown SH. (2009). Dynamic proprioceptive target matching behaviour in the upper limb: task complexity and arm/hemisphere asymmetries. *Behav Brain Res 200*:7-14.

41. **Goble DJ**, Coxon JP, Wenderoth N, Van Impe A, Swinnen SP. (2009). Proprioceptive sensibility in the elderly: Degeneration, functional consequences and plastic adaptive processes. *Neurosci Biobehav Rev 33*:271-278.

42. **Goble DJ**, Brown SH**.** (2008) Upper limb asymmetries in the matching of proprioceptive versus visual targets. *J Neurophysiol 99* 3063-3074*.*

43. **Goble DJ**, Brown SH. (2008). The biological and behavioral basis of upper limb asymmetries in sensorimotor performance. *Neurosci Biobehav Rev 32*(3):598-610.

44. **Goble DJ**, Brown SH. (2007). Task dependent upper limb asymmetries in the utilization of proprioceptive feedback for goal directed movement. *Exp Brain Res 180*:693-704.

45. **Goble DJ**. (2006). The potential for utilizing inter-limb coupling in the rehabilitation of motor disability due to unilateral brain injury. *Disabil Rehabil 28*(18): 1103-1108.

46. **Goble DJ**, Lewis CA, Brown SH. (2006). Upper limb asymmetries in the utilization of proprioceptive feedback. *Exp Brain Res 168*: 307-311.

47. **Goble DJ**, Lewis CA, Hurvitz EA, Brown SH. (2005). Development of upper limb proprioceptive accuracy in children and adolescents. *Hum Mov Sci, 24*(2): 155-170.

48. **Goble DJ**, Marino GW, Potvin JR. (2003). The influence of horizontal velocity on interlimb symmetry in normal walking. *Hum Mov Sci, 22*(3): 271-283.

Patents

1. **Goble DJ**. Detecting clinically relevant changes in balance. (Pending). OMB 0651-0032

Book Chapters

1. Swinnen SP, Heuninckx S, Van Impe A, **Goble DJ**, Coxon JP, Wenderoth N. (2010). Aging and movement control: the neural basis of age-related compensatory recruitment. Oxford University Press.

Published Letters to the Editor

1. Baweja HS, **Goble DJ**. (in press). On the nature of clinical evaluations with low sensitivity for concussion-related balance deficits. *J Sport Rehabil*.

2. **Goble DJ**, Brown SH. (2008). Reply to Dr Derakhshan. *J Neurophysiol 100*(6):3459.

3. **Goble DJ**. (2007). The validity of using reaction time as a basis for determining motor laterality. *J Neurophysiol 97*(2): 1868.

Manuscripts in Progress

1. **Goble DJ**, Rauh MJ, Baweja HS. (Submitted). Normative data for the BTrackS^{TM} Balance Test concussion management tool. J Ath Train.

2. Rhea CK, Schleich KN, Washington L, Glass SM, Ross SE, Etnier JL, Wright WG, **Goble DJ**, Duffy DM. (Submitted). Neuromotor and neurocognitive performance in female American football players relative to previously published data. *Athl Train Sports Health Care*.

Conference Proceedings

1. Zarnow A, Marks C, **Goble DJ**. (2018). Balance Test Protocol for the knee crutch. *Podium Presentation Michigan Regional Meeting for the American College of Sports Medicine, Gaylord, MI.*

2. Baweja H, Carper E, Dib N, Edwards C, Fellow J, Harrington A, Middleman A, Stewart A, **Goble DJ**, Mahar M, Conrad M. (2018). An objective battery of sensorimotor and cognitive tests to assess effects of work shift length on healthcare workers: A proof of principle study. *Human Factors and Ergonomics in Health Care Conference, Boston, MA.*

3. Hearn M, Gilbert PE, Filoteo JV, Litvan I, Sarkar M, **Goble DJ**, Baweja DJ. (2017). Low-frequency oscillations in postural sway vary with sensory weighting and scale with fall-risk in Parkinsons's disease. *Poster at the 47th Annual Meeting of the Society for Neuroscience, San Diego, CA.*

4. Plows AC, Rizeq HN, Nguyen IN, Ruelos KDF, **Goble DJ**, Baweja, HS. (2017). Let's talk about secs: Effects of distraction on speeding and stopping distances in young drivers. *Poster at the 47th Annual Meeting of the Society for Neuroscience, San Diego, CA.*

5. Nip ISB, Arias C, Corcoran J, Ishihara N, **Goble DJ**. (2017). the role of lingual proprioception in speech production. Poster presented at the *Annual meeting of the American Speech-Language-Hearing Association, Los Angeles, CA.*

6. Park S, Corey-Bloom J, Nam S, Haque A, Nathan A, Howell S, Snell C, Zima L, Phung L, Gilbert P, **Goble DJ**. (2017). The Balance Tracking System (BTrackS) Measures Disease Progress and Fall Risk in Huntington's Disease. Poster presentation at the *American Academy of Neurology, Boston, MA*.

7. Schleich KN, Duffy DM, Ross SE, **Goble DJ**, Rhea CK. (2017). Preseason balance differences among collision, contact, and limited contact sport female athletes. Podium presentation at the *International Association for Physical Education and Sport for Girls and Women, Miami, FL.*

8. Baweja HS, Romero M, Castagner E, Kress A, Vasko B, Rabanal MJ, Rauh M, **Goble DJ.** (2017). Lifespan normative data for the BTrackS Balance Test. Poster presented at the C*ombined Sections Meeting, American Physical Therapy Association, San Antonio, TX.*

9. Burke MM, Taylor BP, Erram JS, Filoteo JV, Gilbert PE, **Goble DJ**, Baweja HS. (2016) Postural control with concurrent cognitive tasks in Parkinson's disease patients. *Poster at the 46th Annual Meeting of the Society for Neuroscience, San Diego, CA.*

10. Erram JS, Taylor BP, Gilbert PE, **Goble DJ**, Baweja HS. (2016) Dual-tasking diverts attention from postural control in older adults. *Poster at the 46th Annual Meeting of the Society for Neuroscience, San Diego, CA.*

11. Soria SM, Rauh MJ, **Goble DJ**, Baweja HS. (2016) Acute postural control deficits in Division I college athletes following mild concussions. *Poster at the 46th Annual Meeting of the Society for Neuroscience, San Diego, CA.*

12. Frenchik CA, Soria SM, Rauh MJ, **Goble DJ**, Baweja HS. (2016) Normative data for the BTrackS Sports Balance Test in school and college athletes. *Poster at the 46th Annual Meeting of the Society for Neuroscience, San Diego, CA.*

13. 5. Graff CD, Baweja HS, **Goble DJ**. (2016) Implementation of BTrackS for assessment of balance in individuals with stroke. *Poster at the 46th Annual Meeting of the Society for Neuroscience, San Diego, CA.*

14. Levy SS, Thralls KJ, **Goble DJ**. (2016) reliability and validity of a portable balance tracking system (BTrackS) in older adults. *Poster at the 37th Annual Meeting of the Society of Behavioral Medicine*.

15. Cone BC, **Goble DJ**, Rhea C. (2016) Postural control complexity is associated with enhanced balance and improved vestibular function following a balance intervention. *Podium at the 40th Annual Meeting of the American Society of Biomechanics, Raleigh, North Carolina.*

16. Blair DM, McKnight J, Hooper J, Adamian A, **Goble DJ**, Beachy G, Rauh MJ. (2015) Positional injury incidence among interscholastic baseball players: A longitudinal study. *J Orthop Sports Phys*

Ther 2016;46(1):A31. 2016 *Combined Sections Meeting, American Physical Therapy Association, Anaheim, CA.*

17. Frenchik C, Soria S, Schulman S, Picardi D, **Goble DJ**, Baweja HS. (2015) Maturation of postural sway is not influenced by body mass index or gender. *Poster at 45th Annual Meeting of the Society for Neuroscience.*

18. Herndon A, Corey-Bloom J, Lam A., Gilbert P, **Goble DJ**. (2015). Using a Wii Balance Board to measure disease onset in Huntington's disease. *Poster at 67th Annual Meeting of the American Academy of Neurology*.

19. Herndon A, Corey-Bloom J, Lam A, Heil C, Nam S, Gilbert, P, **Goble DJ**. (2015). Using a brief balance assessment to estimate disease onset in Huntington's disease. *Poster presented at 19th International Congress of Parkinson's Disease and Movement Disorders.*

20. Herndon A, Corey-Bloom J, Paik K, Lam A, Nam S, Gilbert P, **Goble DJ**. (2014). Measuring disease onset in Huntington's Disease using a low-cost balance assessment. *Poster presented at 8th Annual Huntington's Disease Clinical Research Symposium of the Huntington Study Group.*

21. Herndon A, Corey-Bloom J, Huynh S, Cho J, Nam S, Howell S, Gilbert P, **Goble DJ**. Using a Wii Balance Board to measure disease onset in Huntington's disease. (2014). *Poster presented at 139th Meeting of the American Neurological Association.*

22. Breen E, Herndon A, Lam A, Gilbert P, **Goble DJ**, Corey-Bloom J. Assessing cognitive deficits in Huntington's Disease with the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS). (2014). *Poster presented at 139th Meeting of the American Neurological Association.*

23. Corey-Bloom J, Herndon A, Barrios C, Breen E, Huynh S, Lam A, **Goble DJ**, Gilbert P. Screening for behavioral disturbances using the UCSD Huntington's Disease-Behavioral Questionnaire (HD-BQ). (2014). *Poster presented at 139th Meeting of the American Neurological Association.*

24. Herndon A, Corey-Bloom J, Paik K, Lam A, Nam SK, Gilbert P, **Goble DJ**. (2014). Measuring disease onset in Huntington's disease using a low-cost balance assessment. *Poster presented at the 8th annual Huntington Disease Clinical Research Symposium.*

25. Herndon A, Corey-Bloom J, Scholl M, Burt D, Huynh S, **Goble DJ**. (2014). Estimating Huntington's disease (HD) onset using a low-cost balance assessment. *Poster presented at the 66th annual meeting of the American Academy of Neurology*.

26. McKnight JS, Beachy G, Adamian A, Blair DM, Hooper JK, Rosenthal MD, **Goble DJ**, Rauh MJ. (2014) Injury incidence among interscholastic baseball players. *Poster presented at the combined sections meeting of the American Physical Therapy Association.*

27. **Goble DJ**, Konczak J, Bastain A, Ostry D. (2014). Propriception: New insights on its neural basis, its dysfunction and training. *Oral presentation at the 24rd annual meeting of the Society for the Neural Control of Movement.*

28. Gonzales T, **Goble DJ**. (2013). Can a frequency band approach induce noise during simultaneous agonist/antagonist tendon vibration at the elbow joint? *Poster presented at the 43th annual meeting of the Society for Neuroscience.*

29. Abbott A, Keown C, Nair A, Koor G, Kirtland S, **Goble DJ**, Axel-Mueller R. Impaired functional connectivity in networks underlying balance in Autism Spectrum Disorders. (2013) *Poster presented at the 43th annual meeting of the Society for Neuroscience.*

30. Cone BL, **Goble DJ.** (2013). An investigation of the sensory mechanisms behind Wii Fit balance training improvements. *Poster presented at the 43th annual meeting of the Society for Neuroscience.*

31. Gonzales T, **Goble DJ**. (2013). Agonist/Antagonist tendon vibration at the elbow induces proprioceptive bias – but does not elicit noise. *Poster presented at the 23rd annual meeting of the Society for the Neural Control of Movement.*

32. Nair A, Kirtland S, Abbott AE, **Goble DJ**, Axel-Mueller R. (2013). Impaired balance correlated with repetitive behavior severity in Autism Spectrum Disorders. *Poster presented at the 41st annual meeting of the International Neuropsychological Society.*

33. Gonzalez T, Aaron MB, Brown SH, Henriques DY, **Goble DJ**. (2012). Can agonist/antagonist tendon vibration be used as a proxy for proprioceptive noise at the elbow joint? *Poster presented at the 42th annual meeting of the Society for Neuroscience.*

34. **Goble DJ**, Aaron MB, Kaufman J, Warschausky S, Langan JM, Hurvitz EA. (2011). The effects of target duration on memory-based elbow joint position matching in healthy adults and individuals with cerebral palsy. *Poster presented at the 41th annual meeting of the Society for Neuroscience.*

35. Brown SH, Cohen JA, **Goble DJ**. (2011). Effects of short-term immobilization on upper limb proprioceptive acuity. *Poster presented at the 41th annual meeting of the Society for Neuroscience.*

36. Heitger MH, **Goble DJ**, Dhollander T, Dupont P, Swinnen SP. (2011). Graph-theoretical analysis of functional brain connectivity during bimanual coordination in the elderly. *Poster presented at the 17th annual meeting of the Organization for Human Brain Mapping.*

37. **Goble DJ**, Coxon JP, Van Impe A, Wenderoth N, Swinnen SP. (2010). Proprioceptive processing and the role of right putamen in young and older adults. *Poster presented at the 40th annual meeting of the Society for Neuroscience.*

38. Coxon JP, **Goble DJ**, Van Impe A, Wenderoth N, Swinnen SP. (2010). The neural basis of age-related differences in cognitive control over action. *Poster presented at the 40th annual meeting of the Society for Neuroscience.*

39. Van Impe A, Coxon JP, **Goble DJ**, Wenderoth N, Swinnen SP. (2010). Aging and dual-task Performance: Simultaneous visuomotor tracking and mental arithmetic. *Poster presented at the 40th annual meeting of the Society for Neuroscience.*

40. Coxon JP, **Goble DJ**, Van Impe A, Wenderoth N, Swinnen SP. (2010). Age-related differences in cognitive control over action: Event-related fMRI of response inhibition. *Poster presented at the 16th annual meeting of the Organization for Human Brain Mapping*.

41. **Goble DJ**, Coxon JP, Van Impe A, Wenderoth N, Swinnen SP. (2009). The neural control of bimanual movements in the elderly: brain regions exhibiting overactivation, compensation and frequency induced neural modulation. *Poster presented at the 39th annual meeting of the Society for Neuroscience.*

42. Coxon JP, **Goble DJ**, Van Impe A, Wenderoth N, Swinnen SP. (2009). AGE-ILITY: Basal ganglia function when elderly switch between coordinated movement patterns. *Poster presented at the 39th annual meeting of the Society for Neuroscience*.

43. Van Impe A, Coxon JP, **Goble DJ**, Wenderoth N, Swinnen SP. (2009). Ipsilateral coordination at preferred rate: Effects of age, body side and task complexity. *Poster presented at the 39th annual meeting of the Society for Neuroscience*.

44. Noble BC, Brown SB, **Goble DJ**. (2009). Enhancement of sensory memory during position matching tasks: Increased acuity with prolonged exposure to target stimuli. *Poster presented at the 39th annual meeting of the Society for Neuroscience*.

45. Coxon JP, **Goble DJ**, Van Impe A, Wenderoth N, Swinnen SP. (2009). Age-ility: Basal ganglia function when elderly switch between coordinated movement patterns. *Poster presented at the Progress in Motor Control VII meeting.*

46. **Goble DJ**, Coxon JP, Van Impe A, Wenderoth N, Swinnen SP. (2009). Bimanual coordination and neural overactivation in the elderly. *Poster presented at the Progress in Motor Control VII meeting.*

47. **Goble DJ**, Noble BC, Brown SH. (2008). Non-preferred arm dominance for proprioceptive matching in left-handers. *Poster presented at the 38th annual meeting of the Society for Neuroscience.*

48. Brown SB, **Goble DJ**, Hurvitz EA. (2008). Hemispheric asymmetries in the ability to utilize position-related proprioceptive feedback in hemiplegic cerebral palsy. *Poster presented at the annual meeting of the Society for the Neural Control of Movement.*

49. **Goble DJ**, Brown. (2007). Movement accuracy during the matching of dynamic proprioceptive feedback. *Poster presented at the 37th annual meeting of the Society for Neuroscience.*

50. **Goble DJ**, Brown SH. (2007). Non-preferred arm advantages in the coordination of static and dynamic proprioceptive feedback. *Poster presented at the Progress in Motor Control VI meeting.*

51. **Goble DJ**, Brown SH. (2006). Asymmetries in the accuracy of matching visual versus proprioceptively-determined target arm positions. *Poster presented at the 36th annual meeting of the Society for Neuroscience.*

52. **Quinn-Walsh CM, Bangert AS,** Goble DJ**, Boonin AE, Seidler RD. (2006). Age-related changes in brain recruitment patterns for unimanual and bimanual motor control.** ***Poster presented at the University of Michigan Institute of Gerontology annual symposium.***

53. Goble DJ**, Brown SH. (2005). The effects of start position on the accuracy of proprioceptively-guided movements.** ***Poster presented at the 35th annual meeting of the Society for Neuroscience.***

54. **Lewis CA,** Goble DJ**, Hurvitz EA, Brown SH. (2005). Proprioceptive acuity and multi-joint coordination in hemiplegic cerebral palsy.** ***Poster presented at the annual meeting of the American Congress of Rehabilitation Medicine.***

55. **Goble DJ**, Hurvitz EA, Nelson VS, Brown SH. (2005). Upper limb coordination in children with congenital brachial plexus palsy. *Poster presented at the annual meeting of the American Congress of Rehabilitation Medicine.*

56. **Lewis CA,** Goble DJ**, Hurvitz EA, Brown SH. (2005). Sensorimotor coordination in children with hemiplegic cerebral palsy.** ***Poster presented at the annual meeting of the American Academy of Physical Medicine and Rehabilitation.***

57. Goble DJ**, Hurvitz EA, Nelson VS, Brown SH. (2005). Bilateral facilitation of upper limb movements in children with congenital brachial plexus palsy.** ***Oral presentation given at the annual meeting of the American Academy of Physical Medicine and Rehabilitation.***

58. Goble DJ, **Brown SH. (2005). Limb specific differences in the ability to utilize active versus passive proprioceptive target information.** ***Poster presented at the Progress in Motor Control V meeting.***

59. Goble DJ, **Brown SH. (2005). Limb asymmetries in proprioceptive matching performance during tasks of varying complexity.** ***Poster presented at the annual meeting of the Society for the Neural Control of Movement.***

60. **Walsh CM, Bangert AS,** Goble DJ**, Boonin AE, Noll DC, Reuter-Lorenz PA, Seidler RD. (2005). Age-related brain activation changes on a unimanual and bimanual tapping task.** ***Poster presented at the Wayne State University Institute of Gerontology, University of Michigan Institute of Gerontology & Michigan Alzheimer's Disease Research Center Joint symposium.***

61. **Goble DJ**, Chesney JD, Lewis CA, Brown SH. (2004). Limb asymmetries during passive but not active proprioceptive matching. *Poster presented at the 34th annual meeting of the Society for Neuroscience.*

62. **Lewis CA,** Goble DJ**, Hurvitz EA, Brown SH. (2004). Proprioceptive acuity in children with mild spastic hemiparesis.** ***Poster presented at the 34th annual meeting of the Society for Neuroscience.***

63. **Bangert AS, Walsh CM, Boonin AE, Anderson E,** Goble DJ**, Reuter-Lorenz PA, Seidler RD. (2004). The effects of aging on discrete and continuous motor coordination.** ***Poster presented at the 34th annual meeting of the Society for Neuroscience.***

64. **Walsh CM, Bangert AS,** Goble DJ**, Boonin AE, Noll DC, Reuter-Lorenz PA, Seidler RD. (2004). Neural correlates of age-related changes in unimanual and bimanual coordination.** ***Poster presented at the 34th annual meeting of the Society for Neuroscience.***

65. **Bangert AS, Walsh CM, Boonin AE, Anderson E,** Goble DJ**, Reuter-Lorenz PA, Seidler RD. (2004). The effects of aging on bimanual motor coordination.** ***Poster presented at the annual Meeting of the Cognitive Neuroscience Society.***

66. Walsh CM, **Goble DJ**, Bangert AS, Boonin AE, Noll DC, Reuter-Lorenz PA, Seidler RD. (2004). Motor control and ageing: neural indicators of compensation and decline. *Poster presented at the annual meeting of the Cognitive Neuroscience Society.*

67. **Goble DJ**, Conti GE, Samczyk NL, Hurvitz EA, Nelson VS, Brown SH. (2003). Bilateral upper limb coordination in children with brachial plexus injury. *Poster presented at the 33rd annual meeting of the Society for Neuroscience.*

Selected Awards and Honours

2010	Canadian Institutes of Health Research – Institute of Aging Age+ Award	1000 CAD
2008	Outstanding Dissertation Award (Nominated)	
2007	Stan Kemp Award	1000 USD
2006	Outstanding Graduate Student Instructor Award	1000 USD
2006	Student's Choice Award for Teaching Excellence	
2005	Lucille Swift Award	1000 USD
2005	Paul A. Hunsicker Memorial Award	500 USD
2001	University of Windsor Post-Graduate Tuition Award	Free tuition

University Service and Affiliations

2017-present	Member of University Committee on Undergraduate Instruction (UCUI), Oakland Univ
2017-present	DPT Faculty Search Committee, Oakland Univ
2017-present	Environmental Health and Safety Faculty Search Committee, Oakland Univ

2015-2017	Member of CHHS Research Committee, San Diego State Univ
2014-2017	Affiliate Member Center for Clinical and Cognitive Neuroscience, San Diego State Univ
2013-2015	Chair of CHHS Curriculum Committee, San Diego State Univ
2013-2017	Chair of ENS Scholarship Committee, San Diego State Univ
2013-2017	DPT Doctoral Faculty Member, San Diego State Univ
2012-2015	DPT Faculty Search Committee Member, San Diego State Univ
2012-2017	Fellow and Advisory Committee Member, Center on Aging, San Diego State Univ
2012-2014	Student Research Symposium Judge, San Diego State Univ
2005-2007	Office of Student Conflict Resolution Panelist, Univ Michigan
2005-2007	Graduate Student Member of Rackham Student Appeals Committee, Univ Michigan
2006	Candidate for Vice President of Rackham Student Government, Univ Michigan
2005-2006	Freshman Student Orientation – Oral Presenter, Univ Michigan
2003-2006	Graduate Student Forum Representative, Univ Michigan
2002-2006	Graduate Student Representative for Curriculum Advisory Group (CAG), Univ Michigan
2001-2002	Human Kinetics Representative on the Graduate Student Society (GSS), Univ Windsor
2001-2002	Kinesiology Representative on Graduate Studies Research Committee, Univ Windsor
2001-2002	Graduate Student Elections Committee, Univ Windsor
1999-2000	Human Kinetics Representative on University of Windsor Student Alliance, Univ Windsor

Grant, Fellowship and Conference Proposal Reviewer

2013-present	Post-doctoral fellowship awards, Research Foundation – Flanders, BE
2011	Federal Grant Proposals, Romanian National Council for Scientific Research, RO
2010-2011	Leoni Foundation Grant, University of Michigan School of Kinesiology, USA
2009-2010	International Symposium on BMIC

<u>Manuscript Reviewer</u>

1. Journal of Neurophysiology
16. Journal of Motor Behavior

2. Experimental Brain Research
3. Neuropsychologia
4. Behavioral Brain Research
5. Acta Psychologia
6. PLOS One
7. Cognitive Processing
8. Journal of Applied Biomechanics
9. Journal of NeuroEngineering and Rehab
10. Neuroimage
11. Journal of Advanced Research
12. Frontiers in Neuroscience
13. Exercise and Sport Science Reviews
14. Medical Science Monitor
15. Human Brain Mapping
17. Quarterly Journal of Experimental Psychology
18. Behavioral and Brain Functions
19. European Journal of Applied Physiology
20. Journal of Experimental Psychology (HPP)
21. Human Movement Science
22. Current Medicinal Chemistry
23. Psychological Research
24. Age
25. Journal of Physiology
26. Journal of Gerontology – Psych Sciences
27. Medicine and Science in Sports and Exercise
28. Perceptual and Motor Skills
29. Clinical Interventions in Aging
30. Gait and Posture

Professional Memberships

2003-present	Society for Neuroscience (SfN)
2011-2017	Clinical and Translational Research Institute (CTRI), UCSD
2005-2012	Society for the Neural Control of Movement (NCM)
2004-2011	International Society of Motor Control (ISMC)
2006	American Academy of Physical Medicine and Rehabilitation (AAPMR)
2001-2005	International Society of Biomechanics (ISB)

Workshops Attended and Certificates Obtained

2017	Nuts and Bolts: Writing Tweets, Brights and Soundbites – Oakland Univ
2012	Classroom Engagement Strategies – San Diego State Univ
2012	Grant Proposals: Tricks of the Trade – San Diego State Univ
2011	i>clicker Training Course - Univ of Mich
2010	Preparing Future Faculty – Univ of Mich
2010	Online Survey Implementation (Surveymonkey) - Univ of Mich Med School
2010	Guide to improved presentations - Univ of Mich Med School
2009	Statistical Parametric Mapping (SPM) Course – Univ of Zurich
2008	fMRI training course – Katholieke Univ Leuven

2007	Transcranial Magnetic Stimulation (TMS) Certification Course - Univ of South Cal
2007	Introduction to MatLab for the Life Sciences - Mathworks
1998-2007	Certification in CPR - Red Cross
2006	Advanced Technologies for Neuro-motor Assessment and Rehab Summer School
2005	Web-design with Dreamweaver MX - Univ of Mich faculty exploratory
2004	Stats Workshop - Univ of Mich Center for Statistical Consultation and Research (CSCAR)
2004	Motor Control Summer School – Penn State Univ
2003	LabView Basics I – National Instruments
2003	fMRI techniques workshop - Univ of Michigan fMRI Center
2001	National Coaching Certification Program (NCCP) Level 1 & 2 Theory

Supervisory Experience

Dissertation/Thesis Advisor

Sarah Kirtland (2013); ENS, San Diego State Univ, USA

Sean Willard (2014); ENS, San Diego State Univ, USA

Dissertation/Thesis Committee Member

Kristen Schleich (2016-present); Kinesiology, UNC Greensboro, USA

Sutton Richmond (2016-present); Health and Exercise Science, Colorado State Univ, USA

Anna Macari (2017-present); Clinical Psychology, SDSU, USA

Emily Bower (2016-present); Clinical Psychology, UCSD, USA

Juyeaun Moon (2016-present); Bio-engineering, San Deigo State Univ, USA

Lauren Gross (2016-present); Dept of Psychol, San Diego State Univ,USA

Ehran Khan (2015-present); Bio-engineering, San Diego State Univ, USA

Ben Mashian (2015); Bio-engineering, San Diego State Univ, USA

Nicole DeFord, (2015), Dept of Psychol, San Diego State Univ, USA

Catherine Sumida (2015), Dept of Psychol, San Diego State Univ, USA

Shankar Meenkeri, (2015); Dept of Engineering, San Diego State Univ, USA

Tyler Shaw, (2014); Dept of Engineering, San Diego State Univ, USA

Merage Ghane (2013); Dept of Psychol, San Diego State Univ, USA

Krupa Pranesh (2012); Dept of Engineering, San Diego State Univ, USA

Amanda Khan, (2012); Dept of Psychol, San Diego State Univ, USA

Doctorate of Physical Therapy Research Projects

Nicholas Goettel (2018-2020); ENS, San Diego State Univ, USA

Wendy Schwilhofer (2018-2020); ENS, San Diego State Univ, USA

Daniel Orr (2018-2020); ENS, San Diego State Univ, USA

Keith Waldrup (2018-2020); ENS, San Diego State Univ, USA

Alex Ayar (2018-2020); ENS, San Diego State Univ, USA

Chelsea Santos (2014-2016); ENS, San Diego State Univ, USA

Alejandro Cerna (2014-2016); ENS, San Diego State Univ, USA

Nicholas Kniefel (2014-2016); ENS, San Diego State Univ, USA

Kelsey Crooks (2014-2016); ENS, San Diego State Univ, USA

Ryan Gere (2014-2016); ENS, San Diego State Univ, USA

Brittany Pogue (2013-2015); ENS, San Diego State Univ, USA

Madi Goldin (2013-2015); ENS, San Diego State Univ, USA

Arnold Lazaga (2013-2015); ENS, San Diego State Univ, USA

Unu Tran (2013-2015); ENS, San Diego State Univ, USA

Masters Research Assistants

Julie Hannon (2016); ENS, San Diego State Univ, USA

Jessica Pena (2016); ENS, San Diego State Univ, USA

Mason Hearn (2015-2016); ENS, San Diego State Univ, USA

Scott Benedict (2015-present); ENS, San Diego State Univ, USA

Jake Bernards (2015); ENS, San Diego State Univ, USA

Trevor Viboch (2014-2016); ENS, San Diego State Univ, USA

Jenna Rubin (2014-2015); ENS, San Diego State Univ, USA

Paul West (2014); ENS, San Diego State Univ, USA

Tom Dodsworth (2013-2015); ENS, San Diego State Univ, USA

Melissa Diek (2013-2014); ENS, San Diego State Univ, USA

Jeffrey Hinshaw (2013-2014); ENS, San Diego State Univ, USA

Brian Cone (2012-2014); ENS, San Diego State Univ, USA, USA

Jacob Schwartz (2012-2013); ENS, San Diego State Univ, USA

Tomas Gonzalez (2012-2013); ENS, San Diego State Univ, USA

Jasper Chang (2012-2013); ENS, San Diego State Univ, USA

Larry Kennard (2012-2013); ENS, San Diego State Univ, USA

Undergraduate Research Assistants

Shayne Billmeyer (2018-present), Anna Fooy (2017-2018), Ashley Huang (2017-2018), Carly Pawlitz (2017-2018), Cole Gibson (2017-2018), Danny Van (2017-present), Emily Soley (2017-present), Harshan Brar (2017-present), Jordan Parker (2017-2018), Kevin Young (2017-2018), Tara Maudrie (2017-2018), Jessica Atencio (2016-2017), Aubrey Jones (2016-2017), Hannah Price (2016-2017), Chistina Frenchik (2015-2017), Selena Mae (2015-2017), Carly Graff (2015-2017), Stephanie Schulman (2014-2015), Ryan Byron-Fields (2013- 2015), Dayne Carmichael (2012-2014), Julia Lyons, (2013), Lars Guillermo (2012-2013), Anna Samson (2012-2013), Seth Seay (2012), Micah Aaron (2010-2012), Josh Cohan (2010-2011), Rachel Wilson (2010-2011), Brittany Noble (2007-2010), Pooja Bhadbhade (2005-2007), Kristen Barbieri (2006-2007), Stephanie Levy (2006), Adlai Cleveland (2006), Taylor Scharf (2006), Abbey Downing (2006), Nathan Taylor (2005), Juby Chacko (2006-2007) Jon Priebe (2005), Jason Chesney (2004), Kota Takahashi (2004).

Charles R.C. Marks

Curriculum Vitae

Home: Grand Blanc
MI, 48439

Work: Exercise Science Program
School of Health Sciences
Oakland University
Rochester, MI 48309

EDUCATION

The University of Michigan, Ann Arbor, Michigan

Ph.D. (Physical Education-Kinesiology), April 1989

Dissertation (Defended December 1988):

Bioresistance Theory Applied to

Body Composition Estimation

M.S. (Physical Education), 1981

Research:"Non-invasive Arterial and Mixed Venous PCO_2 and CCO_2 Differences in Exercising Children with Congenital Heart Disease: A Validity Study"

Oakland University, Rochester, Michigan

B.G.S. April 1978

The University of Wisconsin-LaCrosse, Wisconsin

Certificate of Completion, June 1980

Total Cardiac Rehabilitation Process-

A two week workshop

EMPLOYMENT

Exercise Science Program Director, August 2017 – Present.

Interim Exercise Science Program Director, August 2016-August 2017.

Associate Professor, Exercise Science Program,

Oakland University, August 1994 – Present

Assistant Professor January 1989 -1994

Instructor September 1988 to December 1988

Adjunct Associate Professor,

College of Osteopathic Medicine,

Michigan State University,

July 1993 – June 2011

Lecturer, Division of Education,

The University of Michigan, January 1984 – August 1988

TEACHING

Undergraduate

Introduction to Exercise Science (EXS202)

Exercise Physiology (EXS304)

Exercise Physiology Laboratory (EXS306)

Independent Study (EXS493)

Graduate

Advanced Exercise Physiology (EXS520)

Introduction to Research Methods (EXS500)

Muscle Physiology (EXS620)

Laboratory Instrumentation (EXS615)

Research: Thesis or Comprehensive Exams (EXS670)

Directed Study and Research (693)

Seminar in Exercise Science (EXS630)

Diagnostic & Exercise Prescription (EXS530)

SERVICE

University

FRPC (2015 – 2018)

Senate

Library Council*

Research Committee

Assessment Committee

General Education Committee*

Honors College Thesis Mentor

*Chaired one time

School of Health Sciences

FPAC

CAP (Chair 2010 – 2015)

Human Health Day-Lab. Demonstrations & Program Discussion (since 2013)

Commencement Student Marshal (2015, 2016)

Healthcare Summer Camp (2016, 2017)

Exercise Science Program

Program Assessment Coordinator (2000 – current)

Chair of Exercise Science's Visiting Assistant Professor Search Committee (2016)

Outside University

In-service: Body Composition Assessment, Methods & Averages. June 2016, Cardiac Rehabilitation Center, Henry Ford Hospital.

Reviewer for the *Journal of Sports Sciences* (July 2016)

Abstract Reviewer for Midwest American College of Sports Medicine Annual Conference (2016, 2017).

Moderator for Midwest American College of Sports Medicine Annual Conference (2016).

Abstract judge for student posters for Midwest American College of Sports Medicine Annual Conference (2017)

PUBLICATIONS

Books

Proctor J, M Choi, **CRC Marks**. *Exercise Physiology: Laboratory Manual.* Kendall Hunt Pub. Co., Dubuque, IA. 2014 (Revised in 2016, 2017).

Publications Currently Being Written.

Marks CRC, Bendow R, Schroeder D. Stability Ball versus Chair Sitting During Arm Ergometry Wingate Test.

Marks, CRC. Impact of Stability Ball Sitting on Peak VO_2 and Heart Rate during Arm + Leg Exercise

Marks, CRC and M Nguyen**.** Impact of Different Types of Stability Balls on VO_2 and Heart Rate During Aerobic Arm Exercise.

Marks, CRC. Companion Advanced Exercise Physiology Laboratory Manual.

Publications in Review.

None.

Papers in Refereed Journals

Marks CRC, S Grapsas, D Wagner. Stability Ball Sitting During Semi-Recumbent Exercise. International Journal of Human Movement and Sports Sciences. 6(2):30-37, 2018.

Marks, CRC, C Goulette. Impact of Stability Ball Sitting on Heart Rate, Stroke Volume, and Oxygen Content Difference. American Journal of Sports Science. 6(1):26-31, 2018.

Marks CRC, Dupuie L, Patros J. Sitting on a Stability Ball Elevates Peak Oxygen Consumption and Heart Rate During Arm Ergometry. International Journal of Exercise Science. 5(1):360-366, 2012.

Marks CRC, Hylland KE, Terrell J. Stability Ball versus Chair Sitting During Sub-maximal Arm Ergometry. International Journal of Exercise Science. 5(1): 16-25, 2012.

Sanchez-Moreno C, Kimler VA, … , **Marks CRC**. Effect of Blueberry nutritional supplement on macronutirents, food group intake, and plasma vitamin E and vitamin C in US athletes. Inter J Food Sci Nutri. 2007;59(4):327 – 338.

Kimler, V.A., M. Tracy-Bee, C.D. Ollie, R.M. Langer, J.M. Montante, **C.R.C**. **Marks**, D.C.Freeman, R.A. Hough, J.D. Taylor. Characterization of Melanophore Morphology by Fractal Dimension Analysis. Pigment Cell Research 17:1-8, 2004.

Keteyian, S.J., B. Duscha, C.A. Brawner, H.J. Green, **C.R.C. Marks**, F.H. Schachat, B.H. Annex, W.E. Kraus. Differential Effects of Exercise Training in Men and Women with Chronic Heart Failure. American Heart Journal. 145:912-918, 2003.

Keteyian, S.J., **C.R.C. Marks**, C.A. Brawner, A.B.Levine, T. Kataoka, T.B. Levine. Responses to Arm Exercise in Patients with Compensated Heart Failure. Journal of Cardiopulmonary Rehabilitation. 16:366-371, 1996.

Fedel, F.J., S. Keteyian, C.A. Brawner, **C.R.C. Marks**, M.J. Hakim, T. Kataoka, Cardiorespiratory Responses During Exercise in Competitive In-Line Skaters, Medicine and Science in Sports and Exercise. 27 (5) :682-687, 1995.

Keteyain, S., **C.R.C. Marks**, A.B. Levine, F.Fedel, J. Ehrman, T. Kataoka, T.B. Levine. Cardiovascular Responses of Cardiac Transplant Patients to Arm and Leg Exercise. European Journal of Applied Physiology. 68:441-444, 1994.

Kataoka, T., S.J. Keteyian, **C.R.C. Marks**, F.Fedel, A.B. Levine, T.B. Levine. Exercise Training in a Patient with Congestive Heart Failure on Continuous Dobutamine: Case Study. Medicine and Science in Sports and Exercise. 26 (6) :678-681, 1994.

Keteyian, S.J., **C.R.C. Marks**, A.B. Levine, T. Kataoka, F. Fedel, T.B. Levine. Cardiovascular Responses to Submaximal Arm and Leg Exercises in Cardiac Transplant Patients. Medicine and Science in Sports and Exercise. 26 (4) :420-424, 1994.

Becque, M.D., V. Katch, **C. Marks**, R. Dyer. Reliability and Within Subject Variability of Ve, VO2, Heart Rate and Blood Pressure During Submaximum Cycle Ergometry. International Journal of Sports Medicine. 14(3),220-223, 1993.

Keteyian, S.J., **C.R.C Marks**, F.J. Fedel, J.K. Ehrman, B.R. Goslin, A.M. Connolly, J.D. Fachnie, T.B. Levine, M.J. O'Neil. Assessment of Body Composition in Heart Transplant Patients. Medicine and Science in Sports and Exercise. 24 (2) :247-252, 1992.

Bonzheim, S., B. Franklin, C. DeWitt, **C. Marks**, B. Goslin, R. Jarski, S. Dann. Physiologic Responses to Recumbent vs Upright Cycle Ergometry: Implications for Exercise Prescription. American Journal of Cardiology. 69: 40-44, 1992.

Katch, V., M.D. Becque, **C. Marks**, C. Moorehead, A. Rocchini. Gender Dimorphism in Size, Shape, and Body Composition of Child-Onset Obese and Nonobese Adolescents. International Journal of Obesity. 15:267-282, 1991.

Katch, V., **C.R.C. Marks**, M.D. Becque, C. Moorehead, A. Rocchinni. Basal Metabolism of Obese Adolescents: Evidence for Energy Conservation Compared to Normal and Lean Adolescents. American Journal of Human Biology. 2:543-551, 1990.

Ballor, D., M. Becque, **C. Marks**, K. Nau, V.L. Katch. Physiological Responses to Nine Different Exercise:Rest Protocols. Medicine and Science in Sports and Exercise. 21(1):90-95, 1989.

Becque, M.D., V. Katch, A. Rocchini, **C. Marks**, C. Moorehead. Coronary Risk Incidence of Obese Adolescents: Reduction by Exercise Plus Diet Intervention. Pediatrics. 81(5):605-612, 1988.

Katch, V., M.D. Becque, **C. Marks**, C. Moorehead, A. Rocchini. Basal metabolism of obese adolescents: inconsistent diet and exercise effects. American Journal of Clinical Nutrition. 48(3):569 - 9, 1988.

Katch, V., M.D. Becque, **C. Marks**, A. Rocchini. Oxygen Uptake and Energy Output During walking of Obese Male and Female Adolescents. American Journal of Clinical Nutrition. 47(1):26-32, 1988.

Ballor, D.L., V. Katch, M.D. Becque, **C. Marks** Resistance weight Training During Caloric Restriction Enhances Lean Body Weight Maintenance. American Journal of Clinical Nutrition. 47(1):19-25, 1988.

Marks, C, V. Katch. Biological and Technological Variability of Residual Lung Volume. Medicine and Science in Sports and Exercise. 18(4):485-488, 1986.

Marks, C., V. Katch, A. Rocchini, R. Beekman, A. Rosenthal. Validity and Reliability of Cardiac Output by CO2 Rebreathing: A Review. Sports Medicine. 2:432-446, 1985.

Katch, V., A. Rocchini, M.D. Becque, C. Marks, C. Moorhead. Basal Metabolism of Obese Adolescents 1: Age, Gender, and Body Composition effects. International Journal of Obesity. 9:69-76, 1985.

Beekman, R., V. Katch, **C Marks**, A. Rocchini. Validity of CO2 Rebreathing Cardiac Output During Rest and exercise in Young Adults. Medicine and Science in Sports and Exercise. 16(3):306-310, 1984.

Refereed Abstracts & Presentations

Marks, CRC, Different Types of Stability Balls: Impact on Heart Rate and VO2 Responses to Aerobic Arm Exercise. *Med Sci Sports Exerc*. 2017;47(5 Suppl): S.

Murley, M, **CRC Marks**. Reliability of Female Heart Rate Variability. *Med Sci Sports Exerc*. 2017;47(5 Suppl): S.

Marks, CRC, C Goulette. Impact of Stability Ball Sitting on Heart Rate, Stroke Volume, and Oxygen Content Difference. *Med Sci Sports Exerc*. 2016;47(5 Suppl): S.

Marks CRC. Impact of Stability Ball Sitting on Peak VO_2 and Heart Rate during Arm + Leg Exercise. *Med Sci Sports Exerc*. 2015;47(5 Suppl): S425.

Marks CRC, R Benbow, D Schroeder. Impact of Stability Ball Sitting during an Arm Wingate test. *Med Sci Sports Exerc*. 2014; 46(5 Suppl): S842

Marks CRC, K Bronsteen, B Hibner, JK Ehrman, D Kerrigan, SJ Keteyian. Cardiorespiratory Responses of Cardiac Rehabilitation Participants to Stability Ball Sitting during Arm Ergometry *Med Sci Sports Exerc*. 2013;45(5 Suppl):S646

Palazzolo J, **CRC Marks**, SE Saliga, T Hew-Butler. Does Pre-cooling Enhance Aerobic Capacity in Individuals with Mutiple Sclerosis? *Med Sci Sports Exerc*. 2013;45(5 Suppl):S432

Seaton AM, **CRC Marks**, MJ Seaton, HJ Engels. Effects of Acute Caffeine Intake on Wingate Test Performance in a Creatine Supplemented State. *Med Sci Sports Exerc*. 2013;45(5 Suppl):S245

Szymanski AF, ME Pepin, **CRC Marks**, TD Hew-Butler. Gastrocnemius Strength and Flexibility in Marathon Runners with and without Patellofemoral Pain. *Med Sci Sports Exerc*. 2013;45(5 Suppl):S609

Unru SD, BR Goslin, **CRC Marks**, R Gellish. Shooting Styles Under Physiological Stress: Sighted versus Non-sighted. *Med Sci Sports Exerc*. 2013;45(5 Suppl):S703

Marks CRC, J Leach, D Wagner, L Schachinger, B Brennan, S Grapsas. Stability Ball Sitting During Semi-Recumbent Exercise. *Med Sci Sports Exerc*. 2012;44(5 Suppl):S703

Marks CRC, Patros J. Male and Female differences During Intense Aerobic Arm Exercise While Sitting on a Stability Ball. International e-Conference on Kinesiology and Integrated Physiology. 2011. Sponsor: *Int J Exerc Sci*. 2011; ( ):S-S.

Marks CRC, Dupuie L, Schmid L, Schwalbe E, Rau J. Stability Ball Elevates Peak Oxygen Consumption and Heart Rate During Arm Ergometry. *Med Sci Sports Exerc*. 2011;43(5 Suppl): S309

Gliha B, **Marks CRC**, ….Effects of Exercise Training on Aerobic Capacity, Muscular Strength and Depression in TBI Patients. *Med Sci Sports Exerc*. 2011;43(5 Suppl):S92

Marks CRC, Hylland K. Female and Male Differences During Stability Ball Sitting and Arm Ergometry. International e-Conference on Kinesiology and Integrated Physiology. 2010. Sponsor: *Int J Exerc Sci*. 2010;5(1):S4-S5.

Marks CRC, Czasak B, Terrell J. Sitting on a Stability Ball Elevates Oxygen Consumption During Arm Ergometry. ACSM National Annual Meeting, Baltimore, MD. *Med Sci Sports Exerc*. 2010;42(5 Suppl):S444.

Ramirez R, **Marks CRC**, Keteyian S, Fedel F, Kataoka T, LeVine T, LeVine A.

Cardiovascular Recovery Following Maximal Arm and Leg Exercise in Heart

Transplant Patients. ACSM National Annual Meeting. *Med Sci Sports Exerc*.

1992;

Ellis L, **Marks CRC**, Nalasek B, Krauss J, Posiask F, Sorbo,. Arm versus Leg

Systolic Pressure Measured During Maximal Arm Exercise in Trained and

Detrained Subjects. ACSM National Annual Meeting. *Med Sci Sports Exerc*.

1991; 23(4 Suppl):S165.

Other Abstracts & Presentations

Heath C, C Wilson, **CRC Marks**. Knee Scooter versus Crutches for VO2 and Heart Rate. Feb 2018, MIACSM Annual Meeting, Gaylord, MI.

Mazzola, K, R Semma, J Palazzolo, T Brennan, C Wilson. **CRC Marks**. Knee Scooter versus Crutches for Kinematic Responses. Feb 2018, MIACSM Annual Meeting, Gaylord, MI.

Zornow, A, D Goble, **CRC Marks**. Balance Test Protocol for Knee Crutch. Feb 2018, MIACSM Annual Meeting, Gaylord, MI.

Murley, M, J Druin, **CRC Marks**. Heart Rate Variability in Females: A Time Domain and Frequency Domain Reliability Study. Feb 2016, MIACSM Annual Meeting, Gaylord, MI.

Cole, A, E Jianis, **CRC Marks**. Impact of Stability Ball Sitting during Arm Ergometry on Metabolism, Vascular Resistance, and MAP. Feb 2016, MIACSM Annual Meeting, Gaylord, MI.

Marks, CRC, C Goulette. Impact of Stability Ball Sitting on Heart Rate, Stroke Volume, and Oxygen Content Difference. Nov 2015, MWACSM Annual Conference, Fort Wayne, Ind.

Goulette, C, **CRC Marks**. Impact of Stability Ball Sitting on Cardiac Output during Arm ergometry. Feb 2015, MIACSM Annual Conference, Gaylord MI.

Marks, CRC. Impact of Stability Ball Sitting on Peak VO_2 and Heart Rate during Arm + Leg Exercise. Nov 2014; MWACSM Annual Conference, Merrillville, IN.

Belanger, J, L Bravender, E Hawkins, J Schepper, S Sterling, T Thompson, **CRC Marks.** Seminar: Arm and Leg Exercise While Sitting on a Stability Ball. Feb 2014, MIACSM Annual Conference, Gaylord MI.

Marks CRC, R Benbow, D Schroeder. Impact of Stability Ball Sitting During Arm Wingate Testing. Nov. 2013. MWACSM Annual Conference, Merrillville, IN.

Unru S, **CRC Marks**. Feb 2013; Shooting styles: accuracy and EMG responses. MIACSM Annual Conference, Gaylord MI.

Marks CRC, K Bronsteen, B Hibner, JK Ehrman, D Kerrigan, SJ Keteyian. Cardiorespiratory Responses of Cardiac Rehabilitation Participants to Stability Ball Sitting during Arm Ergometry. Oct. 2012. MWACSM Annual Conference, Maumee Bay, OH.

Wagner D, **CRC Marks**. Semi-recumbent Exercise Sitting on a Stability Ball: Heart Rate and VO2. Feb. 2012; MIACSM Annual Conference, Gaylord, MI

Leach J, **CRC Marks**. Semi-recumbent Exercise Sitting on a Stability Ball: EMG. Feb. 2012; MIACSM Annual Conference, Gaylord, MI

Brennan B, **CRC Marks**. Semi-recumbent Exercise Sitting on a Stability Ball: Kinematics. Feb. 2012; MIACSM Annual Conference, Gaylord, MI

Grapsas S, **CRC Marks**. Semi-recumbent Exercise Sitting on a Stability Ball: Habituation. Feb. 2012; MIACSM Annual Conference, Gaylord, MI

Van Sumeren M, **CRC Marks**. Semi-recumbent Exercise Sitting on a Stability Ball: Belt Support Impact. Feb. 2012; MIACSM Annual Conference, Gaylord, MI

Marks CRC, D Wagner, J Leach, L Schachinger, B Brennan. Stability Ball Sitting Does Not Affect VO2 or Herat Rate During Semi-recumbent Leg Exercise. Oct. 2011 MWACSM Annual Meeting. Indianapolis, IN

Palazzolo J, **CRC Marks**, S Saliga, T Hew. Does Pre-Cooling Enhance Aerobic Endurance in Individuals with Multiple Sclerosis? Oct. 2011 MWACSM Annual Meeting. Indianapolis, IN

Siekirk N, T Hew, BR Goslin, **CRC Marks**. The effect of Active Recovery on Blood Lactate and Performance in Elite Male Hockey Players. Oct. 2011 MWACSM Annual Meeting. Indianapolis, IN

Schmitz A, **Marks CRC**. Impact of Artificial Weight Gain/Loss on Peak Fat Metabolism. Feb. 2011; MIACSM Annual Conference, Gaylord, MI.

Dupuie L, **Marks CRC**. Impact of Sitting Mode During Maximal Arm Ergometry:EMG and Kinematics. Feb. 2011; MIACSM Annual Conference, Gaylord, MI.

Schwalbe, E, **Marks CRC**. Impact of Sitting Mode During Maximal Arm Ergometry: VO2 and Heart Rate. Feb. 2011; MIACSM Annual Conference, Gaylord, MI.

Schroeder D, **Marks CRC**. Impact of Sitting Mode During Wingate Arm Test: Power Output and Heart Rate. Feb. 2011; MIACSM Annual Conference, Gaylord, MI.

Benbow R, **Marks CRC**. Impact of Sitting Mode During Wingate Arm Test: EMG and Kinematic. Feb. 2011; MIACSM Annual Conference, Gaylord, MI.

Marks CRC, J Rau, E Schwalbe, L Schmid, L Dupuie, J Patros. Sitting on a Stability Ball Elevates Maximal Oxygen Consumption and Heart Rate During Arm Ergometry. Oct. 2010 MWACSM Annual Meeting. Indianapolis, IN

Marks CRC, Czasak B. Stability Ball versus Chair Sitting During Arm Ergometry: VO2, Heart Rate, and Blood Pressure. Feb. 2010; MIACSM Annual Conference, Gaylord, MI.

Terrell J, **Marks CRC**. Stability Ball versus Chair Sitting During Arm Ergometry: EMG. Feb. 2010; MIACSM Annual Conference, Gaylord, MI.

Hylland K, **Marks CRC**. Stability Ball versus Chair Sitting During Arm Ergometry: Kinematic. Feb. 2010; MIACSM Annual Conference, Gaylord, MI.

Grants

Marks, CRC. iWalk donation of two Knee Crutches for research. July 2017.

Marks CRC (PI) & J Drouin (co-PI). Heart Rate Variability in a cohort of active and inactive female cancer survivors & apparently healthy. School of Health Sciences Faculty Grant Application, $1,200. Submitted May 2016, not funded.

Marks, CRC (PI), J. Druin, Q Xianggui. Cardiovascular Disease Risk Assessment Among Women in Breast Cancer Survivorship: An Exploratory Study. NCI Small Grants Program for Cancer Research (NCI Omnibus RO3). The Opportunity Announcement is: PAR-14-007 (a reissue of PAR-12-144). ($100,000 direct costs + $50, 000 indirect costs, over two years). Submitted June 2015. Not funded.

Curriculum Vitae

Name:	**Myung D. Choi**, PhD
Office Address:	3169 Human Health Building 433 Meadow Brook Rd., Rochester, MI 48309
Phone Number:	(248) 364-8685
Department/Program:	Human Movement Science / Exercise Science
Rank:	Assistant Professor

I. EDUCATION

DATE	INSTITUTION	DEGREE	MAJOR AND MINOR	FIELDS OF STUDY
2006	Ball State University	Doctor of Philosophy	Exercise Physiology	Lipid metabolism and insulin resistance in skeletal muscle
2000	Seoul National University	Master of Art	Exercise Physiology	Analysis of EMG after 8 weeks of exercise training and vitamin supplement
1998	Dong-A University	Bachelor of Art	Physical Education	Physical Education

II. PROFESSIONAL EMPLOYMENT RECORD

TEACHING

INSTITUTION	RANK	DATES	STATUS
St. Ambrose University Davenport, IA 52803	Assistant Professor	Aug. 2011 - Dec. 2013	Full-time
Syracuse University Syracuse, NY 13244	Visiting Assistant Professor	Aug. 2009 – May 2011	Full-time

OTHER

ORGANIZATION	POSITION HELD	DATES	RESPONSIBILITIES
East Carolina University Greenville, NC 27858	Post-doctoral fellow	Aug. 2005 – Aug. 2009	Research projects related to the he effects of nitric oxide, endothelial and inducible nitric oxide synthase on lipolysis using microdialysis in abdominal and femoral subcutaneous adipose tissue.
Ball State University Muncie, IN 47306	Graduate Research Asst	Aug. 2002 - July. 2004	Research projects related to skeletal muscle incubation in high concentration of lipid and its effect on glucose metabolism and insulin resistance.
Seoul National University Seoul, South Korea	Graduate Asst	Mar. 1998 – Feb. 2000	Master's research project.

III. OAKLAND UNIVERSITY EMPLOYMENT RECORD

RANK	INITIAL APPOINTMENT	REAPPOINTMENT	PROMOTION
Assistant Professor	January 2014	August 2016	

IV. OAKLAND UVIVERSITY INSTRUCTION RECORD (last 2 yrs)

YEAR	SEM	COURSE NUMBER	COURSE NAME	CRN (include all sections)	EVALS (Y/N)	# of students
2017	Su	EXS405/505	Health & Disease	31987/31988	Y	14
2017	Winter	EXS 540	Nutrition, Weight Management, & Exercise	11580	Y	10
		EXS441/541	EXS 441/541 Obesity and Physical Activity	13445/13446	Y	15
		EXS 350	Human Motion Analysis	11478	Y	21
		EXS 306	Exercise Physiology Laboratory	11831	Y	13
		EXS 306	Exercise Physiology Laboratory	11477	Y	14
2016	Fall	EXS 520	Advanced Exercise Physiology	40201	Y	18
		EXS 350	Human Motion Analysis	40200	Y	33
		EXS 306	Exercise Physiology Laboratory	40877	Y	15
		EXS 306	Exercise Physiology Laboratory	41866	Y	13
2016	Su	EXS405/505	Health & Disease	32646/32647	Y	10
2016	Winter	EXS 540	Nutrition, Weight Management, & Exercise	11624	Y	20
		EXS441/541	EXS 441/541 Obesity and Physical Activity	13544/13545	Y	16
		EXS 350	Human Motion Analysis	11512	Y	29
		EXS 306	Exercise Physiology Laboratory	11070	Y	14
		EXS 306	Exercise Physiology Laboratory	11511	Y	11
		EXS 306	Exercise Physiology Laboratory	11879	Y	14
2015	Fall	EXS 520	Advanced Exercise Physiology	40214	Y	20
		EXS 350	Human Motion Analysis	40213	Y	32
		EXS 306	Exercise Physiology Laboratory	40917	Y	14
		EXS 306	Exercise Physiology Laboratory	41976	Y	14

V. PUBLICATIONS

Manuscript under Review

1. Rajvi Doshi, Crystal Payter, Kristin Landis-Piwowar and **Myung Choi**. The Effect of Vinyasa Yoga on Bone Mineral Density and Cardiovascular Risk Factors in Healthy College Students. *International Journal of Yoga (currently under review)*

2. Crystal Payter, Charles Marks, and **Myung Choi**. The Effects of Vinyasa Yoga on Cardiovascular and Physical Fitness in Sedentary Young Adults. *International Journal of Yoga (currently under review)*

3. **Myung D. Choi**, Emily A. Sauers, Raymond M. Kraus, Michael J. Ormsbee, and Robert C. Hickner. Response of Subcutaneous Adipose Tissue Nitric Oxide Synthases to 10 days of Exercise Training. *International Journal of Obesity (currently under review)*

Manuscript in Preparation

1. **Choi, M** and Park, K. Effects of 5-week summer school program on inflammatory markers and oxidative stress in female adolescents

2. **Choi, M** and Park, K. Pilot Study: Effects of Short-term Summer School Program on Plasma Cognitive Marker and Non-lipid Cardiovascular Risk Factors in Female Adolescents

3. **Choi, M**., Johnson, E., Kraus, R., Ormsbee, M., Hickner, R. Depot-specific Effects of Exercise Training on Nitric Oxide Suppression of Subcutaneous Adipose Tissue Lipolysis in Premenopausal Women

Peer-Reviewed Publications

1. Kelly Michiya and Myung Choi. The Effects of Pilates Exercise on Cardiometabolic Health, Low Back Pain and Disease. *International Journal of Human Movement Science, 2018 (accepted)*

2. Review on Exercise Intervention Methods for Weight Loss in Obese Individuals. Yun-A Shin, Myung-Dong Choi, Il-Young Kim, *Exercise Science*, Vol.25, No.4, November 2016: 219–229. https://doi.org/10.15857/ksep.2016.25.4.219

3. Obesity, Insulin Resistance, and Skeletal Muscle Nitric Oxide Synthase, Kraus RM, Houmard JA, Kraus WE, Tanner CJ, Pierce JR, Choi MD, Hickner RC. *Journal of Applied Physiology*, Sep;113(5):758-65, 2012

4. Howe, HR III., Heidal, K., Choi, MD., Kraus, RM., Boyle, K., and Hickner, RC. Increased adipose tissue lipolysis after a two-week high-fat diet in sedentary overweight/obese men. *Metabolism*, July 60(7); 976-981, 2011

5. Ormsbee, M., M. Choi, J. Medlin, G. Geyer, L. Trantham, G. Dubis, and R. Hickner. Regulation of Fat Metabolism During Acute Resistance Exercise in Lean and Obese Men. *Journal of Applied Physiology*, May 106(5); 1529-37, 2009.

6. Ormsbee, M. Thyfault, J., Johnson, E.; Kraus, R.; Choi, M.; and Hickner, R., Fat Metabolism and Acute Resistance Exercise in Trained Men. *Journal of Applied Physiology*, May 102(5); 1767-72, 2007

7. Scot E. Wanamaker, Myung D. Choi and Cheol-Ho Lee. The Effects of Vitamin E Supplementation and Resistance Training on Muscle Function in Elderly Subjects. *Daegu Universiade Conference*, 260-267, 2003.

8. Choi, M. D., Jung, D. J., Chung, S. T., Jun, T. W., & Lee, W. R. The Effect of Antioxidants Supplement & Exercise Treatment on the Metabolism and Muscle Fatigue during Maximal Exercise. *Exercise Science*, 9 (1): 137-148, 2000.

Book Publication

Julie Proctor, Myung Choi, Charles Marks. *Exercise Physiology Laboratory Manual*. Kendall Hunt Publishing Company, 2014. ISBN 978-1-4652-6747-4

Book Chapter

Lloyd Jesse, Kelleher Andrew, Choi Myung, Keslacy Stefan. *Type 1 Diabetes - Pathogenesis, Genetics and Immunotherapy*. Chapter 9 - Type I Diabetes and the Role of Inflammatory-Related Cellular Signaling *InTech. November, 2011*. ISBN 978-953-307-362-0.

VI. PRESENTATIONS

Poster (Peer Reviewed)

TITLE	AUTHORS	AUDIENCE OR FUNCTION	DATES
Association of Multiple Short Exercise Bouts and Health Benefits in Sedentary Office Workers	Myung Choi, Lakshmi Ramya Jayanty, and Kristin Landis-Piwowar	Experimental Biology Conference	April 2018
Improving Cardiac Function and Body Composition through Incentive-Based Smartphone App in Sedentary Overweight Adults	Myung Choi, Austin Standridge, and Kristin Landis-Piwowar	Experimental Biology Conference	April 2018

The Association of Body Composition with Cardiometabolic Risk Factors in Apparently Healthy Young Adult Females.	Samantha C. Orr, Mary A. Elsesser, Ryan T. Tyler, Timothy A. Rengers, Evan Eschker, Tamara Hew-Butler, FACSM, Charles R.C. Marks, Kristin R. Landis-Piwowar, Myung D. Choi, Elise C. Brown	Midwest American College of Sports Medicine	Nov. 2017
Effects of 5-week summer school program on inflammatory markers and oxidative stress in female adolescents	Choi, Myung and Park, Kyung	American College of Sports Medicine	May 2017
The Effect of Vinyasa Yoga on Bone Mineral Density and Cardiovascular Risk Factors in Sedentary Young Adults	Myung D. Choi, Crystal Payter, Kristin Landis-Piwowar, and Rajvi Doshi	Experimental Biology Conference	April 2017
The Effects of Vinyasa Yoga on Cardiovascular and Physical Fitness as well as Psychological Profiles of Well-being	Myung Choi, Charles Marks, Kristin Landis-Piwowar, and Crystal Payter	Experimental Biology Conference	April 2017
Pilot Study: Effects of Short-term Summer School Program on Plasma Cognitive Marker and Non-lipid Cardiovascular Risk Factors in Female Adolescents	Choi, Myung and Park, Kyung	Experimental Biology Conference	April 2017
Does NF-kB Signaling Regulate Chemerin Expression in Adipocytes?	Lloyd J., Choi M., Keslacy S.	Experimental Biology Conference	April 2011
Multiplex Profiling Demonstrates that Circulating Adipokines are Related to Insulin Sensitivity but not BMI	JR Pierce, RM Kraus, JA Houmard, WE Kraus, CJ Tanner, MD Choi, RC Hickner.	American College of Sports Medicine	May, 2011
Adenosine Suppression of in-vivo Lipolysis in Obese Premenopausal Women	KM Gavin, GH Geyer, JD LaFavor, RC Hickner and MD Choi	American College of Sports Medicine	May, 2010
Response of Prostaglandins and Nutritive Blood Flow to 8 Weeks of Exercise Training in Aged Human Skeletal Muscle.	MD Choi, JA Carrithers, TP Gavin, RM Kraus, CA Evans, RS Ruster, DJ Knapp, JS McCartney, JP Garry, and RC Hickner	ACSM conference on Integrative Physiology of Exercise	Sept., 2008
Regulation of Fat Metabolism During Acute Resistance Exercise in Lean and Obese Men	M. Ormsbee, M. Choi, J. Medlin, G. Geyer, L. Trantham, G. Dubis, and R. Hickner	Obesity Society's Annual Scientific Meeting	Oct., 2008
Response of Prostaglandins and Nutritive Blood Flow to 7 Days of Exercise Training in Young and Aged Human Skeletal Muscle	MD Choi, JA Carrithers, TP Gavin, RM Kraus, CA Evans, RS Ruster, DJ Knapp, JS McCartney, JP Garry, and RC Hickner	Experimental Biology Conference	April 2008

Limb Blood Flow and Microvascular Exchange Response to 7 Days of Exercise Training in Young and Aged Men	R Hickner, R. Kraus, MD. Choi, J Carrithers, C. Evans, R. Ruster, D. Knapp, J. McCartney, J. Garry, and T. Gavin	ACSM conference on Integrative Physiology of Exercise	Sept., 2008
Response of Subcutaneous Adipose Tissue Nitric Oxide Synthases to 10 Days of Exercise Training	MD Choi, EA Johnson, RM. Kraus, MJ. Ormsbee, and RC. Hickner	ACSM conference on Integrative Physiology of Exercise	April 2007
The regulation of ceramide content by 5-aminoimidazole-4-carboxamide ribonucleoside (AICAR) in rat skeletal muscle	Choi, M.D., Scott E. Pattison, James B. Olesen, Carolyn N. Vann, Ho Youl Kang, Bruce W. Craig	The Intergrative Biology of Exercise	April 2006
The Effects of Nitric Oxide on Lipolysis in Obese Women before and After 10 Days of Exercise Training	Emily A. Johnson, Myung D. Choi, Raymond M. Kraus, Michael J. Ormsbee, and Robert C. Hickner	ACSM conference on Integrative Physiology of Exercise	Sept., 2006

Invited Oral Presentation

TITLE	AUDIENCE OR FUNCTION	DATES
Obesity: Greater Urgency than Poverty	World Affairs Council, Bettendorf, IA	January, 2014

VII. RESEARCH IN PROGRESS

TOPIC	STATUS	ROLE
Incentive based smart phone application, will contribute to improvements in cardiopulmanary health?	Under IRB review as of August, 2017	CO-Primary investigator, project development, Faculty Advisor
A comparison of high-intensity interval training protocols on cardimetabolic markers, physical performance, and psychosocial markers in college females	Under data collection as of August, 2017	Data collection and analysis
The Effects of Interrupting Prolonged Sitting and Self Exercise in Sedentary Office Workers	Under data collection as of August, 2017	Primary investigator, project development
The Effect of Vinyasa Yoga on Cardiovascular and Psychological Profiles in College Students	[Completed] These project with MS student	Faculty Advisor

VIII. GRANT ACTIVITY

TITLE OF GRANT	AMOUNT	FUNDED YES/NO	SOURCE OF GRANT	DATES
Does It Matter How Slow or Fast You WALK?	$10,000	YES	University Research Center	December, 2107

Metabolic Energy Costs During Interval Walking in Healthy Adults	$2500	YES	SHS Research Awards	February, 2018
The Effects of Interrupting Prolonged Sitting and Self Exercise in Sedentary Office Workers	$5,000	YES	SHS Research Awards	June, 2016
The Effect of Long-Term Supplementation of Polyphenol on Adipocyte Lipolysis and Low-Grade Inflammation in Obese Humans	$5,000	YES	Prevention Research Center	May, 2015
Natural Products, Inflammation and Fat Metabolism in Humans	$1,200	YES	URC Faculty Research Award	Feb., 2015
Regulation of lipid metabolism by nitric oxide in obese African American and Caucasian individuals	$5015	YES	Prevention Research Center	April, 2014
Lilly Conference Travel Grant from Center for Excellence in Teaching and Learning	$1195	YES	Center for Excellence in Teaching and Learning	June, 2014
The effect of lipid on glucose uptake in skeletal muscle	$500	YES	Graduate Student Research Grant	April, 2005
Muscle atrophy during simulated weightlessness: the influence of hormonal interactions	$8,000	YES	Indiana Space Grant Consortium Student Research Grant	2002

IX. MEMBERSHIPS IN SCHOLARLY OR PROFESSIONAL ORGANIZATIONS

ORGANIZATION	MEMBERSHIP CATEGORY	DATES
American College of Sports Medicine	Member	2001-Present

X. SERVICE

Department of Human Movement Science (Exercise Science Program)

RESPONSIBILITY	CHAIR / DIRECTOR	DATES
MS Student Advising: 15 advisees	Advisor: Myung Choi choi@oakland.edu	Present
MS Student Comprehensive Exam Committee: Evaluate/grade the final oral exams	Chair: Charles Marks goslin@oakland.edu	2014 - Present
Exercise Science BS Degree Committee: Served as a committee member to create BS degree in Exercise Science Program	Chair: Charles Marks goslin@oakland.edu	Fall 2016 - Present

School of Health Sciences

RESPONSIBILITY	CHAIR / DIRECTOR	DATES
SHS Research Awards Committee: determine and carry out a process for distributing monetary awards to support faculty research and faculty and student travel in the School of Health Sciences	Chair: Amanda Lynch lynch3@oakland.edu	2014 - present

SHS Elections Committee: served as a committee member to conduct elections and make appointments in SHS	Chair: Rebecca Cheezum cheezum@oakland.edu	Jan. 2016 - present
Faculty Search Committee: served as a faulty search committee member to hire a new faculty in Ex. Sci. program	Chair: Tami Hew hew@oakland.edu	September 2016 – June 2017
Faculty Adviser in New/Transfer Student Orientation: help transfer students registering and organizing courses	Assistant Director: Yoel Joa joa@oakland.edu	Summer, 2017 Summer, 2015

University

RESPONSIBILITY	CHAIR / DIRECTOR	DATES
Student Academic Support Committee: to promote the academic success of students by considering, evaluating, and recommending policies and procedures in the areas of advising, financial aid, registration, admissions, student life, career development, and any other areas of student academic interest that may be brought before it.	Chair: Laura Dinsmoor dinsmoor@oakland.edu	Sept., 2015 - present

Profession

RESPONSIBILITY	CHAIR / DIRECTOR	DATES
Reviewer: Honors College Thesis Proposals	Served as a guest reviewer for Emmanuel Jianis's proposal	June, 2015

XI. MISCELLANEOUS

Conferences or Workshops Related to Best Practices in Teaching, Research, and Student Learning

DATE	EVENT
Winter, 2017	• Center for Excellence in Teaching and Learning workshops, Rochester, MI - Getting a Foundation to Fund Your Research • OU Library training course at Oakland University Rochester, MI - Citation management with new Reworks interface
Fall, 2016	• Preparing abstract for ACSM and Experimental Biolgoy • OU training course at Oakland University, Rochester, MI - Preparing for the URC Awards
Winter, 2016	• OU Library training course at Oakland University Rochester, MI - Getting Cited: Increase Your Impact • Center for Excellence in Teaching and Learning workshops, Rochester, MI - Grant Writer's Seminar
Fall, 2015	• OU training course at Oakland University, Rochester, MI - Preparing for the URC Awards • Center for Excellence in Teaching and Learning workshops, Rochester, MI - Tenure and Teaching Effectiveness - Faculty Feedback: Providing Early Feedback to Students - Teaching Tips

Summer, 2015	• Research Workshop Series at Oakland University, Rochester, MI - Seeking Grants and Writing Proposals - IRB: Approval for Research with Human Subjects
Fall, 2014	• Lilly Conference on College and University Teaching and Learning, Traverse City, MI
Summer, 2014	• Oakland University E-Learning and Instructional Support department (ELIS) - Panopto - Moodle I - Getting Started - Moodle II - Files and Resources - Moodle III - Forums and Chat
Spring, 2014	• Grant Writer's Seminar at Oakland Center, Rochester, MI • Oakland University E-Learning and Instructional Support department (ELIS) - Moodle V - Assignments, Wikis, and Grade Book - Camtasia - Moodle IV - Quizzes

Book Review

- "Exercise Physiology" by Porcari, Bryant, and Comana; F.A. Davis (Fall, 2014)
- "Motor Behavior" by Jeffrey Ives; Lippincot Williams & Wilkins (Spring, 2013)
- "Exercise and Sport Pharmacology" by Mark Mamrack; Holcomb Hathaway Publishers (Fall, 2011)

APPENDIX H
EXS Equipment Inventory (6-25-2018)

Company	Location	Product
Ferno Ille	HHB 1051	Hydrotherapy Unit
Life Measurement Inc.	HHB 1051	BOD POD Body Composition Tracking System
Life Measurement Inc.	HHB 1051	BOD POD Body Composition Tracking System
Linear Instruments Co	HHB 1051	Chart Recorder Data Acquisition Plotter X-Y
Monark Sports & Medical	HHB 1051	Rehab Trainer Ergometer
Monark Sports & Medical	HHB 1051	Rehab Trainer Ergometer
Monark Sports & Medical	HHB 1051	Ergometer
Northern Digital Inc.	HHB 1051	Optotrak System Control Unit
Northern Digital Inc.	HHB 1051	Optotrak Motion Capture Camera
Northern Digital Inc.	HHB 1051	Optotrak Motion Capture Camera
Northern Digital Inc.	HHB 1051	Optotrak Motion Capture Camera
Northern Digital Inc.	HHB 1051	Optotrak Certus Camera
Northern Digital Inc.	HHB 1051	Optotrak Cubic Reference Emitter
Tanita Corp.	HHB 1051	Load Cell
Tanita Corp.	HHB 1051	Load Cell
Toroid Corp.	HHB 1051	Medical Insolation Transformer
Toroid Corp.	HHB 1051	Medical Insolation Transformer
Warren E Collins Inc	HHB 1051	9L Respirometer
Yamato	HHB 1051	Drying Oven
Banlance Tracking Systems	HHB 1051	BTrackS Balance Plate + Laptop and software
Banlance Tracking Systems	HHB 1051	BTrackS Balance Plate + Laptop and software
Banlance Tracking Systems	HHB 1051	BTrackS Balance Plate + Laptop and software
Fujitsu Technology Solutions	HHB 1051	Simi Motion Analysis System (Esprimo P910 E90 +)
Conair Corporation	HHB 2058	WeightWatchers Bone Mass, Body Fat, Body Water Scale
Hamilton	HHB 2058	Steelcrest Examining Table
Mindray	HHB 2058	Portable Spot Check Monitor (Thermometer)
Therapeutic Instruments	HHB 2058	Hand Dynamometer
Hologic, Inc.	HHB 2060	QDR Series X-Ray Bone Densitometer (DEXA Scan)
Bailey Manufacturing CO.	HHB 2067	Wood Patient Table
Mabis Legacy	HHB 2067	Sphygmonanometer
Novel Products Inc.	HHB 2067	Figure Finder Flex-Tester
Acurite	HHB 2069	Humidity Monitor
Monark Sports & Medical	HHB 2069	Ergomedic Bike
Parvo Medics	HHB 2069	TrueOne Metabolic Measurement System (Metabolic cart)
Parvo Medics	HHB 2069	Dilution Pump
Precor	HHB 2069	Treadmill

Samson	HHB 2069	Chromatic Tuner & Metronome
Allied Fisher Scientific	HHB 2071	Centrifuge
Mettler Instrument Corp.	HHB 2071	Balance/Scale
Polar	HHB 2071	Wrist Activity Monitor
Polar	HHB 2071	Wrist Activity Monitor
Polar	HHB 2071	Wrist Activity Monitor
Polar	HHB 2071	Electro Chest Strap Heart Rate Sensor (Amount: 2)
Wescor	HHB 2071	Vapro Vapor Pressure Osmometer
Armstrong Medical Industries Inc.	HHB 4042	Chris Clean Sanitary CPR Manikin (w/Ambu Simulator II)
Armstrong Medical Industries Inc.	HHB 4042	Chris Clean Sanitary CPR Manikin (w/Ambu Simulator II)
Armstrong Medical Industries Inc.	HHB 4042	Chris Clean Sanitary CPR Manikin (w/Ambu Simulator II)
Armstrong Medical Industries Inc.	HHB 4042	Chris Clean Sanitary CPR Manikin (w/Ambu Simulator II)
Armstrong Medical Industries Inc.	HHB 4042	Chris Clean Sanitary CPR Manikin (w/Ambu Simulator II)
Armstrong Medical Industries Inc.	HHB 4042	Chris Clean Sanitary CPR Manikin (w/Ambu Simulator II)
Medtronic Physio-Control Corp.	HHB 4042	Lifepak CR-T AED Trainer
Meridian Medical Technologies	HHB 4042	EpiPen Training Device (Amount: 17)
Philips Medical Systems	HHB 4042	Heartstart Smart Pads II (Amount: 3)
Precor	HHB 4042	Workout Machine Station
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	Professional Adult Training Manikin (Amount: 17)
Prestan Products LLC	HHB 4042	Professional Infant Training Manikin (Amount: 15)
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Prestan Products LLC	HHB 4042	AED Trainer
Simulaids	HHB 4042	Child CPR Manikin (Amount: 2)
TAG	HHB 4042	Barbell Set
TAG	HHB 4042	Dumbell Set
TAG	HHB 4042	Flat Workout Bench

TAG	HHB 4042	Adjustable Workout Bench
The Endorphin Corporation	HHB 4042	Standard Wall Pulley
The Endorphin Corporation	HHB 4042	Standard Wall Pulley
ZOLL Medical Corporation	HHB 4042	AEDPLUS Trainer
	HHB 5050	Stethoscopes (Amount: 14)
A&D Medical	HHB 5050	Sphygmomanometers (Amount: 6)
American Diagnostic Corp.	HHB 5050	Professional Stethoscope
American Diagnostic Corp.	HHB 5050	Sphygmomanometers (Amount: 1)
Baseline Evaluation Instruments	HHB 5050	Grip Dynamometer
Beijing Choice Electronic Tech. Co. Ltd	HHB 5050	Finger Pulse Oximeter
BETA Technology Incorporated	HHB 5050	Lange Skinfold Caliper (Amount: 3)
BIOPAC Systems, Inc.	HHB 5050	Electrocardiogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Skin Temperature Amplifier
BIOPAC Systems, Inc.	HHB 5050	Skin Temperature Amplifier
BIOPAC Systems, Inc.	HHB 5050	Skin Temperature Amplifier
BIOPAC Systems, Inc.	HHB 5050	Skin Temperature Amplifier
BIOPAC Systems, Inc.	HHB 5050	Skin Temperature Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Air Flow Transducer
BIOPAC Systems, Inc.	HHB 5050	Hand Dynamometer (100 kg)
BIOPAC Systems, Inc.	HHB 5050	Data Acquisition Unit
BIOPAC Systems, Inc.	HHB 5050	Universal Interface Module
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable

BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	General Purpose Transducer Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Data Acquisition Unit
BIOPAC Systems, Inc.	HHB 5050	SPO2 Pulse Oximeter Amplifier
BIOPAC Systems, Inc.	HHB 5050	Universal Interface Module
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electrocardiogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electrocardiogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Hand Dynamometer (100 kg)
BIOPAC Systems, Inc.	HHB 5050	General Purpose Transducer Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Electromyogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable

BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIOPAC Systems, Inc.	HHB 5050	Skin Temperature Amplifier (Amount: 5)
BIOPAC Systems, Inc.	HHB 5050	Electrocardiogram Amplifier
BIOPAC Systems, Inc.	HHB 5050	General Purpose Transducer Amplifier
BIOPAC Systems, Inc.	HHB 5050	Module Extension Cable
BIO-TEK Instruments, Inc.	HHB 5050	Arrhythmia/ECG Simulator
Boehringer Mannheim Diagnostics	HHB 5050	Autoclix Automatic Lancet Device (Amount: 4)
Bose	HHB 5050	Cardioid Electret Condenser Microphone
Burdick, Inc.	HHB 5050	Stress Test System
Burdick, Inc.	HHB 5050	EKG Machine
Chatillon	HHB 5050	Hanging Scale (9 kg x 10 g)
Chatillon	HHB 5050	Hanging Scale (9 kg x 10 g)
Clay-Adams, Inc.	HHB 5050	Adams Micro-Hematocrit Centrifuge
Creative Health Products, Inc.	HHB 5050	SlimGuide Skinfold Thickness Caliper (Amount: 4)
Davis Instruments	HHB 5050	Vantage VUE Weather Center
Davis Instruments	HHB 5050	Vantage VUE Weather Center
Dimco-Gray Co.	HHB 5050	GRA LAB Universal Timer
Dimco-Gray Co.	HHB 5050	GRA LAB Universal Timer
Dimco-Gray Co.	HHB 5050	GRA LAB Universal Timer
Drive Medical	HHB 5050	Adult Aluminum Crutches
FRANZ MFG. CO., INC.	HHB 5050	Electric Metronome
FRANZ MFG. CO., INC.	HHB 5050	Electric Metronome
FUJIFILM Corporation	HHB 5050	FUJINON Megapixel Lens (Amount: 3)
Hans Rudolph, inc.	HHB 5050	3 Liter Calibration Syringe
Hans Rudolph, inc.	HHB 5050	3 Liter Calibration Syringe
Hans Rudolph, inc.	HHB 5050	Pneumatic Hand Switch
Harpenden British Indicators LTD.	HHB 5050	Grip Dynamometer
International Equipment Co.	HHB 5050	Micro Hematocrit Centrifuge
iWALKFree	HHB 5050	iWALK 2.0
iWALKFree	HHB 5050	iWALK 2.0
J&J Enterprises	HHB 5050	Portable Antique EMG System
John Bull British Indicators LTD.	HHB 5050	Harpenden Skinfold Caliper
John Bull British Indicators LTD.	HHB 5050	Skinfold Caliper (Amount: 2)
Laboratory Corporation of America	HHB 5050	LabCorp Physicians' Centrifuge
Lafayette Instrument Co.	HHB 5050	Grip Dynamometer

Leighton	HHB 5050	Flexometer Flexability Tester
LIFESCAN, INC.	HHB 5050	One Touch Brand Blood Glucose Meter
LifeSource	HHB 5050	Sphygmomanometers (Amount: 2)
Logan Inc.	HHB 5050	Logan Thermometer
Mabis Legacy	HHB 5050	Adjustable Sphygmomanometer
MedaSonics	HHB 5050	Ultrasound Stethoscope
Medline Industries, Inc.	HHB 5050	Adult Aluminum Crutches
Medline Industries, Inc.	HHB 5050	Weil Knee Walker G2
Memorex	HHB 5050	Portable CD Player with AM/FM Radio
Monark Sports & Medical	HHB 5050	Chest Strap Heart Rate Monitor (Amount: 4)
Monark Sports & Medical	HHB 5050	Ergomedic Bike
Monark Sports & Medical	HHB 5050	Ergomedic Bike
Monark Sports & Medical	HHB 5050	Ergomedic Bike
Monark Sports & Medical	HHB 5050	Rehab Trainer Ergometer
Monark Sports & Medical	HHB 5050	Ergomedic Bike
Moore Medical LLC	HHB 5050	Youth Aluminum Crutches
Moore Medical LLC	HHB 5050	Sphygmomanometers (Amount: 3)
Mott Manufacturing LTD	HHB 5050	Fume hood
Nihon Kohden Corporation	HHB 5050	Cardiolife Portable Defibrillator
NONIN Medical, Inc.	HHB 5050	SpO2 Pulse Oximeter
NONIN Medical, Inc.	HHB 5050	SpO2 Pulse Oximeter
Nova Biomedical Corporation	HHB 5050	Lactate Plus
Novel Products Inc.	HHB 5050	Sit and Reach Test
OHAUS	HHB 5050	Triple Beam Balance
OMRON Healthcare, Inc.	HHB 5050	Mercury Sphygmomanometer
Parvo Medics	HHB 5050	Gas Module Controller
Perma Pure LLC.	HHB 5050	Desiccant/Membrane Dryer
PHYSIO-DYNE Instrument Corp.	HHB 5050	Heartrate Converter/Calibrator
PHYSIO-DYNE Instrument Corp.	HHB 5050	MAX-II
Polar	HHB 5050	Chest Strap Heart Rate Sensor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor

Polar	HHB 5050	Electro Oy Wrist Activity Monitor
Polar	HHB 5050	Electro Oy Wrist Activity Monitor
Polar	HHB 5050	WearLink Coded Chest Strap Heart Rate Sensor
Polar	HHB 5050	Chest Strap HR Monitor (Amount: 4)
Polar	HHB 5050	Chest Strap HR Monitor (Amount: 11)
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Wrist Activity Monitor
Polar	HHB 5050	Chest Strap HR Monitor
Precor	HHB 5050	Treadmill
Quinton	HHB 5050	617 Defibrillator
RJL Systems	HHB 5050	Portable Bioelectrical Impedance Analyzer
Sammons Preston, Inc.	HHB 5050	Jamar Hand Dynamometer
Sammons Preston, Inc.	HHB 5050	Jamar Hydraulic Pinch Gauge
Schwinn	HHB 5050	PulseMeter
Schwinn	HHB 5050	PulseMeter
Seiko S-Yard Co., LTD.	HHB 5050	Digital Metronome
Siemens Burdick, Inc.	HHB 5050	Stress Test System
Siemens Burdick, Inc.	HHB 5050	EKG Machine
Staco Energy Products Co.	HHB 5050	Fan/Pump
Summit Doppler	HHB 5050	Handheld Doppler
Summit Doppler	HHB 5050	Handheld Doppler
Symbio	HHB 5050	Code Simulator
Takei & Company, LTD.	HHB 5050	Grip Dynamometer
Takei & Company, LTD.	HHB 5050	Grip Dynamometer
Takei Scientific Instruments Co., LTD.	HHB 5050	Back Strength Dynamometer
Takei Scientific Instruments Co., LTD.	HHB 5050	Back Strength Dynamometer
TAYLOR	HHB 5050	Heavy Duty Hanging Scale
The Foxboro Company	HHB 5050	General Purpose Infrared Analyzer
Universal Electric Co.	HHB 5050	Neptune Dyna-Pump (Model 3)
Vacu Med	HHB 5050	Finger Pulse Oximeter
Vacu Med	HHB 5050	Finger Pulse Oximeter
Western	HHB 5050	Body Scale
Monark Sports & Medical	HHB 5050A	Ergomedic Bike
Ainsworth Division	HHB 5050A	"Vintage" Precision Scale
American Diagnostic Corp.	HHB 5050A	Portable Sphygmomanometer
Beckman Instruments, Inc.	HHB 5050A	Medical Gas Analyzer
Beckman Instruments, Inc.	HHB 5050A	"Pickup" for LB-1 Medical Gas Analyzer

Conair Corporation	HHB 5050A	WeightWatchers Bone Mass, Body Fat, Body Water Scale
COSMED USA, Inc.	HHB 5050A	Mobile Breath by Breath Metabolic System (Transceiver Unit)
COSMED USA, Inc.	HHB 5050A	Mobile Breath by Breath Metabolic System (Telemetry Unit)
COSMED USA, Inc.	HHB 5050A	Mobile Breath by Breath Metabolic System (Charge Unit)
COSMED USA, Inc.	HHB 5050A	Mobile Breath by Breath Metabolic System (Battery Unit A)
COSMED USA, Inc.	HHB 5050A	Mobile Breath by Breath Metabolic System (Battery Unit B)
COSMED USA, Inc.	HHB 5050A	Mobile Breath by Breath Metabolic System (Battery Unit C)
COSMED USA, Inc.	HHB 5050A	Mobile Breath by Breath Metabolic System (Calibration Unit)
COSMED USA, Inc.	HHB 5050A	3 Liter Calibration Syringe
GlobalSat	HHB 5050A	GPS Receiver
Graham-Field, Inc.	HHB 5050A	ECG Caliper (Amount: 6)
Harvard	HHB 5050A	Dry Gas Meter
I.B.S. Corporation	HHB 5050A	Blood Pressure/Pulse Monitor
J&J Engineering	HHB 5050A	Physiological Monitoring System (Isolated Computer Interface and Module Housing)
J&J Engineering	HHB 5050A	Physiological Monitoring System (Module Expansion Housing)
Lafayette Instrument Co.	HHB 5050A	Manual Muscle Tester (Amount: 2)
Littmann Brand	HHB 5050A	ECG Trimmer
Littmann Brand	HHB 5050A	ECG Trimmer
Medical Designs	HHB 5050A	Spectrum Transcutaneous Electrical Nerve Stimulator
Mettler Instrument Corp.	HHB 5050A	Precision Scale
Monark Sports & Medical	HHB 5050A	Rehab Trainer Ergometer
Monark Sports & Medical	HHB 5050A	Rehab Trainer Ergometer
Monark Sports & Medical	HHB 5050A	Ergomedic Bike
Monark Sports & Medical	HHB 5050A	Ergomedic Bike
Monark Sports & Medical	HHB 5050A	Ergomedic Bike
Monark Sports & Medical	HHB 5050A	Ergomedic Bike
Monark Sports & Medical	HHB 5050A	Ergomedic Bike
Monark Sports & Medical	HHB 5050A	Ergomedic Bike
Monark Sports & Medical	HHB 5050A	Ergomedic Bike
Monark Sports & Medical	HHB 5050A	Rehab Trainer Ergometer
Monark Sports & Medical	HHB 5050A	Ergomedic Bike
Monark Sports & Medical	HHB 5050A	Ergomedic Bike
Nasiff Associates, Inc.	HHB 5050A	CardioCard
Nasiff Associates, Inc.	HHB 5050A	CardioCard
Novel Products Inc.	HHB 5050A	Figure Finder Flex-Tester Sit and Reach (Amount: 3)
Puritan-Bennett Corporation	HHB 5050A	Diagnostic Spirometer

Traverse Medical Monitors	HHB 5050A	Capnometer
Warren E. Collins Inc.	HHB 5050A	13.5 L Respirometer
Welch Allyn USA	HHB 5050A	Opthalmoscopes (Amount: 2)
Woodway	HHB 5050A	Treadmill
Abaxis, Inc.	HHB 5060	Piccolo xpress Chemistry Analyzer
Abaxis, Inc.	HHB 5060	Piccolo xpress Chemistry Analyzer
Bausch & Lomb	HHB 5060	Strip-Chart Potentiometric Recorder
BIO RAD	HHB 5060	Gel Dryer
BioTek Instruments	HHB 5060	PowerWave Microplate Spectrophotometer
Clay-Adams, Inc.	HHB 5060	Sero-Fuge Centrifuge
Clay-Adams, Inc.	HHB 5060	Sero-Fuge Centrifuge
Clay-Adams, Inc.	HHB 5060	Sero-Fuge Centrifuge
Corning Medical	HHB 5060	700 Electrophoresis Power Supply
Corning Medical	HHB 5060	700 Electrophoresis Power Supply
Corning Medical	HHB 5060	700 Electrophoresis Power Supply
DADE	HHB 5060	Immufuge Centrifuge
DADE	HHB 5060	Immufuge Centrifuge
DADE	HHB 5060	Immufuge Centrifuge
DADE	HHB 5060	Immufuge Centrifuge
Datalogic Scanning Inc.	HHB 5060	Barcode Scanner
Eppendorf	HHB 5060	Centrifuge
Fisherbrand	HHB 5060	Electric Pipet Controller
Fisherbrand	HHB 5060	Electric Pipet Controller
Fisherbrand	HHB 5060	Elite Pipette
Fisherbrand	HHB 5060	Elite Pipette
Fisherbrand	HHB 5060	Elite Pipette
Fisherbrand	HHB 5060	Elite Multichannel Pipette
Fisherbrand	HHB 5060	Elite Pipette
Fisherbrand	HHB 5060	Elite Pipette
GE Appliances	HHB 5060	Refrigerator
Helena Laboratories	HHB 5060	Incubator/Oven/Dryer
Helena Laboratories	HHB 5060	Titan Micro-Hood
Hoefer Pharmacia Biotech Inc.	HHB 5060	SemiPhor Semi-Dry Blotting Systems
Horiba Scientific	HHB 5060	LAQUAtwin Compact Na+ Meter
Horiba Scientific	HHB 5060	LAQUAtwin Compact Salt Meter
Labconco	HHB 5060	Purifier Logic Class II Type A2 Biosafety Cabinet
Lab-Line Instruments, Inc.	HHB 5060	CO2 Incubator
M Dialysis, Inc.	HHB 5060	ISCUS Flex Microdialysis Analyzer
Medonic	HHB 5060	Hematology Analyzer (Open Vial)
Metrologic Instruments, Inc.	HHB 5060	Barcode Scanner
Millipore	HHB 5060	MultiScreen Punch
Mott Manufacturing LTD	HHB 5060	Fume hood
Mott Manufacturing LTD	HHB 5060	Fume hood
National Appliance Co. (NAPCO)	HHB 5060	Incubator Oven

New Brunswick Scientific	HHB 5060	Ultra Low Temperature Freezer
Precision Scientific Group	HHB 5060	Shaking Water Bath
QSONICA, LLC	HHB 5060	Ultrasonic Cleaner
Reichert	HHB 5060	"TS Meter" Hand Refractometer
Roche Diagnostics	HHB 5060	Electrolyte Analyzer
SONY	HHB 5060	Hyper HAD CCD-IRIS/RGB Color Video Camera
SONY	HHB 5060	Camera Adaptor
Thermo Scientific	HHB 5060	NAPCO Series 8000 DH CO2 Incubator
Thermo Scientific	HHB 5060	Speci Mix Test Tube Rocker
Thermo Scientific	HHB 5060	Sorvall Centrifuge
TOSOH Bioscience, Inc.	HHB 5060	Glycohemoglobin Analyzer

APPENDIX I

LIBRARY REPORT

University Libraries
Rochester, Michigan 48309-4401

MEMORANDUM

To: Kris Thompson, Chair, Human Movement Science, School of Health Sciences (SHS)

From: Helen Levenson, Collection Development Librarian, University Libraries
Julia Rodriguez, Librarian Liaison to SHS, University Libraries

Re: Library collection evaluation for proposed B.S. in Exercise Science

Date: June 23, 2018

In order to complete this library collection evaluation for the proposed B.S. in Exercise Science, we reviewed the University Libraries' current resources related to exercise science, reviewed the SCImago Journal Ranking (SJR) for the related subject sports science, and reviewed resources of comparable B.S. Exercise Science programs. The University Libraries hold a strong collection of exercise science resources due to the exiting M.S. in exercise science graduate program. The following is a current assessment of the University Libraries' ability to support the proposed new B.S. exercise science program.

Health Science Indexes and Databases

The University Libraries maintain subscriptions to significant health science and medical journal indexes and databases that include the field of exercise science. A sample of these resources is as follows:

- *AccessPhysiotherapy*, providing access to physiotherapy and physical therapy information, and procedure and exercise videos;
- *Academic OneFile*, a multi-disciplinary indexing and full-text database;
- *CINAHL Plus with Full-Text*, a health sciences database that provides full-text access to journals;
- *PubMed Central* and *MEDLINE*, the premier databases for biomedical, life science, and allied health information;
- *SPORTDiscus,* a bibliographic database covering physical fitness, exercise, sports medicine, exercise physiology, movement science, injury prevention, and physical therapy and rehabilitation.
- *Web of Science*, a large index covering life sciences and allied health.

Through use of the index databases, users are able to access full-text coverage of the periodical literature through the University Libraries' openURL article linker, the "Get It" link. This service links databases to the Libraries' e-journal packages.

For a full list of databases related to exercise science that the University Libraries make available, including those that are open access, see Databases by Subject-Exercise Science. No addition databases

are recommended at this time due to the resources that have already been provided in support of the exercise science graduate degree.

Monographs

The University Libraries have a solid monograph collection in exercise science but some additional titles should be acquired for basic undergraduate studies, specifically in the subject areas of exercise therapy and exercise-physiological aspects. Table 1 illustrates the University Libraries' monograph holdings in relevant exercise science subjects. See Appendix B for projected costs for the acquisition of additional general academic monographs related to exercise science.

Table 1: Total monograph titles and those acquired within the last five years, subjects related to the proposed B.S. in Exercise Science:

LC call number range/Subject	Total number of books owned	Number of books acquired within the last five years
RA 773-788 Personal health-including exercise	133	35
RC 1200-1245 Sports medicine	125	15
Exercise Therapy	127	6
Exercise-Physiological Aspects	119	13

Journals

The University Libraries' coverage of the journal literature in exercise science is particularly strong, due to currently supporting graduate level studies in exercise science. Appendix A provides a sample list of the major periodicals in this field to which the Libraries currently have access. All of these titles are available online through the Libraries' discovery tool, its general interest periodical databases (e.g. *Academic OneFile*), and its journal publisher packages (e.g. OVID, Sage, Springer, and ScienceDirect), in addition to the subject-specific periodical indexes listed above.

Support for Current Library Resources

As noted above, the University Libraries already subscribe to a number of online resources that will support a B.S. in Exercise Science. However, due to anticipated annual inflationary cost increases for journals and research databases (historically averaging eight percent or more per year), the Libraries cannot guarantee that we will be able to maintain subscriptions even to our current resources. Therefore, we ask that University Libraries be given $1,500 per year (with inflationary increases in each

year) to assist us in funding these resources, which are in support of this proposed program and critical to the broader curriculum of the School of Health Sciences.

Appendix A

A Sample of Current Kresge Library Journals that Support Proposed B.S. in Exercise Science

Title	Current Access
ACSM's Health and Fitness Journal	OVID
American Journal of Sports Medicine	Sage
Applied Physiology, Nutrition and Metabolism	Academic OneFile (1 year embargo)
Asian Journal of Sports Medicine	Open access, Academic OneFile
Biology of Exercise	Open access
British Journal of Sports Medicine	BMJ Journals
Clinical Journal of Sport Medicine	OVID
Clinical Kinesiology	American Kinesiotherapy Association
Clinical Orthopaedics and Related Research	Springer
Dynamic Medicine	PubMed Central; Academic OneFile
Exercise and Sport Sciences Reviews	OVID
Human Movement	Open access
International Journal of Exercise Science	Open access
International Journal of Sport and Exercise Psychology	WilsonSelect; Academic OneFile
International Journal of Sport Nutrition & Exercise Metabolism	Human Kinetics
International Journal of Sports Medicine	Thieme
International Review for the Sociology of Sport	Sage
Journal of Applied Biomechanics	Human Kinetics
Journal of Applied Physiology	American Physiological Society
Journal of Athletic Training	Open access, PubMed Central (1 year embargo), Academic OneFile (6 month embargo)
Journal of Bodywork and Movement Therapies	ScienceDirect
Journal of Bone and Joint Surgery – Series A	American Orthopaedic Association
Journal of Exercise Physiology	Open access
Journal of Exercise Science and Fitness	ScienceDirect
Journal of Orthopaedic and Sports Physical Therapy	American Physical Therapy Association
Journal of Science and Medicine in Sport	ScienceDirect
Journal of Sport and Social Issues	Sage
Journal of Sports Science and Medicine	Open access, Academic OneFile
Journal of Strength and Conditioning Research	OVID
Journal of the International Society of Sports Nutrition	PubMed Central; open access
Medicine and Science in Sports and Exercise	OVID
Open Sports Sciences Journal	Open access
Psychology of Sport and Exercise	ScienceDirect
Research Quarterly for Exercise and Sport	Print, Academic OneFile, Educator's Reference
Sport Journal	Open access, Academic OneFile
Sports Medicine	Springer
Strength and Conditioning Journal	OVID
Women in Sport and Physical Activity Journal	Academic OneFile

Appendix B: Proposed Five-Year Budget for Library Resources to Support a B.S. in Exercise Science

	Year 1	Year 2	Year 3	Year 4	Year 5
Monographs[1]	$ 1,420	$ 1,491	$ 1,566	$ 1,644	$ 1,726
Support for current library resources[2]	$ 1,500	$ 1,620	$ 1,750	$ 1,890	$ 2,041
Total	$ 2,920	$ 3,111	$ 3,316	$ 3,534	$ 3,767
[1]Purchase of approximately 10 books per year for subjects areas for undergraduate studies, with a 5% annual inflationary increase.					
[2]Reflects an 8% annual inflation rate.					

cc: Stephen Weiter, Dean of University Libraries
Elizabeth Wallis, University Libraries Representative to University Senate

ATTACHMENT B

School of Health Sciences
Bachelor of Science in Exercise Science
Program Inception: FY20
Five Year Budget

28 new students per year			Budget Year 1	Budget Year 2	Budget Year 3	Budget Year 4	Budget Year 5
$	13,838.00		$ 387,464	$ 387,464	$ 387,464	$ 387,464	$ 387,464
$	13,827.25			$ 387,163	$ 387,163	$ 387,163	$ 387,163
$	15,811.50				$ 442,722	$ 442,722	$ 442,722
$	16,932.00					$ 474,096	$ 474,096
Total Revenue			$ 387,464	$ 774,627	$ 1,217,349	$ 1,691,445	$ 1,691,445
Expenses							
Salaries							
Faculty Salaries		6101	$ -	$ 65,000	$ 131,625	$ 199,916	$ 204,914
Visiting Faculty		6101					
Administrative Professionals		6201	$ 58,000	$ 59,450	$ 60,936	$ 62,460	$ 64,021
Clerical Technical		6211	$ 43,267	$ 44,349	$ 45,457	$ 46,594	$ 47,759
Administrative IC		6221					
Faculty Inload/Replacement Costs		6301					
Faculty Overload		6301					
Part-Time Faculty		6301					
Graduate Assistant		6311	$ 19,242	$ 38,484	$ 57,726	$ 57,726	$ 57,726
Wages		6401					
Out of Classification		6401					
Student Labor		6501					
Total Salary Expense			**$ 120,509**	**$ 207,283**	**$ 295,745**	**$ 366,695**	**$ 374,419**
Fringe Benefits		6701	$ 48,148	$ 77,821	$ 108,237	$ 139,413	$ 142,898
Total Compensation			**$ 168,657**	**$ 285,104**	**$ 403,982**	**$ 506,108**	**$ 517,318**
Operating Expenses							
Supplies and Services		7101	$ 3,040	$ 3,040	$ 3,040	$ 3,040	$ 3,040
Recruitment and advertising		7101	$ 5,000	$ 2,500	$ 2,000	$ 2,000	$ 2,000
Travel		7201	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000
Equipment		7501	$ 77,400	$ 54,300	$ 54,300	$ 23,000	$ 23,000
Maintenance		7110	$ 4,000	$ 6,500	$ 9,000	$ 9,000	$ 9,000
Student Aid		7726	$ 35,424	$ 70,848	$ 106,272	$ 106,272	$ 106,272
Library		7401	$ 2,920	$ 3,111	$ 3,316	$ 3,534	$ 3,767
Total Operating Expenses			**$ 128,784**	**$ 141,299**	**$ 178,928**	**$ 147,846**	**$ 148,079**
Total Expenses			$ 297,441	$ 426,403	$ 582,910	$ 653,954	$ 665,397
Net Income (Loss)			$ 90,023	$ 348,224	$ 634,439	$ 1,037,491	$ 1,026,048

Proposal for a Bachelor of Science in Exercise Science Presentation to the Board of Trustees

12.10.2018

Charles R.C. Marks
Director, Exercise Science Program
Kris Thompson
Chair, Human Movement Science
Kevin A. Ball
Dean, School of Health Sciences

Current Status of Exercise Science and Pre-Physical Therapy

Bachelor of Health Science (Interdisciplinary Health Sciences Dept)

- ✓ 6 concentrations
  - Exercise Science (concentration)
  - Pre-Physical Therapy (concentration)
- ✓ Enrollment and Graduates
  - 1,250 students with 275-300 graduates a year

Minor & Masters of Exercise Science (Human Movement Science Dept)

Proposal for the Bachelor of Science in Exercise Science (BS in EXS)

- Offer a BS in EXS degree and a Pre-Physical Therapy concentration
- Align the BS in EXS degree and Pre-Physical Therapy concentration with the EXS minor & masters in the Human Movement Science Department

Need for BS in EXS Degree

OU well-positioned in Southeast Michigan

- Recognized Master of Exercise Science program
- BS in EXS/Kinesiology/Movement Science has seen tremendous growth at other universities
- Opportunity for new students and transfer students

OU student demand

- Current students in the EXS/Pre-PT Concentration
- Demand for more EXS courses, internships, research opportunities
- BS in EXS degree for employment and graduate school preparation

Employer and Internship feedback

- Need for preparation consistent with students in EXS majors
- Health care professional preparation

Rationale for BS in EXS

Enrollment

- Base of student interest – estimated 400 current students in EXS and Pre-PT concentration
- Attract new students to Oakland University – 28 students each year, 112 in 4 years
- Allow for transfer students to complete BS in EXS degree

Facilities

- Lab space
- Equipment
- Research – undergraduate and graduate opportunities

Rationale for BS in EXS

Faculty

- Teaching and research expertise in all core courses: Biomechanics, Exercise Physiology and Motor Control

Curriculum

- Curriculum revision complete
- Curriculum designed to provide breadth and depth of preparation for internship, employment and graduate school preparation
- Opportunity for minors that will allow for increased employment and graduate school preparation
- Meets American College of Sports Medicine requirement for certifications

Overview of BS in EXS Course Categories and Credits

Proposed BS in Exercise Science Summary of Credits to Meet Degree Requirements		
Categories	**EXS Major Credits**	**EXS Major Pre-PT Concentration Credits**
General Education Courses	24-28 (given overlap with required and major courses)	24-28 (given overlap with required and major courses)
Required Foundational Courses	39	39
EXS Major Courses	35	35
Concentration	0	21
Electives	Minimum of 22 credits Allows for minors, additional practicum or research courses, or electives in area of interest.	Minimum of 1 elective credit
Total	**124 credits**	**124 credits**

Required Foundational Courses

- Chemistry I/lab (CHM 1440 and 1470)
- Physics I/lab (PHY 1010 and 1100)
- Biology (BIO 1200)
- Human Anatomy (BIO 2100)
- Human Physiology (BIO 2600)
- Human Anatomy or Physiology lab (BIO 2101 or 3621)
- Intro to Psychology (PSY 1000)
- Pre-calculus (MTH 1441)
- Intro to Stats (STA 2200)
- Intro to Research Design (PSY 2500)

EXS Major Courses and Credits

Course Rubric	Course Name	Credits
HS 2000	Health in Personal & Occupational Environments	4
EXS 1000 or EXS 1100	Strength & Conditioning or Cardiovascular Fitness Training	2
EXS 2200	Introduction to Exercise Science	2
EXS 2410	Nutrition for Sport, Exercise and Health	3
EXS 2700	Safety and First Aid in Exercise Settings	2
EXS 3010	Exercise Physiology	3
EXS 3020	Biomechanics	3
EXS 3030	Motor Control	3
EXS 4030	Assessment and Interventions Laboratory	3
EXS 4715	Integrated Lab in Exercise Science	3
EXS 4960 or EXS 4995	Practicum or Directed Research	3
EXS electives	3000/4000 level electives	4

Summary

- Long history
- Strong track record
- Have lacked the major
- Faculty expertise, curriculum, core resources in place

Questions?

BS in EXS (for Students placed into WRT 1050 & MTH 1441) 4 Year Plan			
Year	**Fall**	**Winter**	**Summer**
Freshman	WRT 1050 Comp 1 (4) HS 2000 Health In Per & Occ (4) Art Gen Ed (4) EXS 2200 Introduction to EXS (2) EXS 1000 Strength Training or EXS 1100 Cardiovascular Fitness Training(2) TOTAL CREDITS (16)	BIO 1200 Biology I (4) WRT 1060 II (4) MTH 1441 Pre-calculus (4) Foreign Language Gen Ed (4) TOTAL CREDITS (16)	
Sophomore	BIO 2100 Human Anatomy (4) BIO 2101 Anatomy Lab (1) PSY 1000 Intro Psychology (4) EXS 2410 Nutrition for Exercise, Sport and Health (3)** Western Civ Gen Ed (4) TOTAL CREDITS (16)	BIO 2600 Human Physiology (4) PSY 2500 Research Design (4) STA 2220 Intro to Stats (4) EXS 2700 Safety & First Aid (2) EXS elective (2) TOTAL CREDITS (16)	
Junior	CHM 1440 &1570 Gen Chem & Lab (5) Lit Gen Ed (4) EXS 3010 Ex Physiology (3) EXS 4030 Assessment & Interventions* TOTAL CREDITS (15)	Global Perspective Gen Ed (4) EXS 3030 Motor Control (3) Approved elective credits (9) TOTAL CREDITS (16)	
Senior	PHY 1010 &1100 Gen Physics I and Lab (5) EXS 3020 Biomechanics** (3) EXS 4715 Integrated Lab (3) Approved electives (6) TOTAL CREDITS (17)	Writing intensive gen ed (4) EXS 4960 Practicum** or EXS 4995 Directed Research** (3) EXS elective (2) Approved electives (7) TOTAL CREDITS (16)	*new course ** revised course
	Approved electives minimum of 8 credits at 3000-4000 (use of electives may allow for minors in other programs or concentrations developed in EXS)	TOTAL CREDITS FOR DEGREE 124 (WRT 1050 is not counted towards degree. Presumes the gen ed courses selected meet diversity requirement.)	

BS in EXS (Pre-PT Concentration) (For Students placed into WRT 1050 & MTH 1441) 4 Year Plan			
Year	Fall	Winter	Summer
Freshman	WRT 1050 Comp 1 (4) HS 2000 Health In Per & Occ (4) EXS 2200 Introduction to EXS (2) EXS 1000 or 1100 (2) Art Gen Ed (4) TOTAL CREDITS (16)	BIO 1200 Biology I (4) WRT 1060 II (4) MTH 1441 Precalc (4) Foreign Language Gen Ed (4) TOTAL CREDITS (16)	
Sophomore	BIO 2100 Human Anatomy (4) BIO 2101 Anatomy Lab (1) PSY 1000 Intro Psychology (4) Western Civ Gen Ed (4) EXS 2410 Nutrition for Exercise, Sport and Health (3)** TOTAL CREDITS (16)	BIO 2600 Human Physiology (4) PSY 2500 Research Design (4) STA 2220 Intro to Stats (4) Global Perspective Gen Ed (4) MSL 2100 Med Term (1) TOTAL CREDITS (17)	
Junior	CHM 1440 &1570 Gen Chem & Lab (5) PSY 2250 Developmental Psych (4) Lit Gen Ed (4) EXS 3010 Ex Physiology (3) TOTAL CREDITS (16)	CHM 1450 & 1480 Gen Chem II & Lab (5) EXS 3030 Motor Control (3) EXS 2700 First Aid & CPR (2) PT 3020 PT as a Profession (2) EXS 4030 Assessment & Interventions* TOTAL CREDITS (15)	
Senior	PHY 1010 &1100 Gen Physics I and Lab (5) EXS 3020 Biomechanics (3)** EXS 4715 Integrated Lab (3)* Writing Intensive gen ed (4) Approved elective (1) TOTAL CREDITS (16)	PHY 1020 &1110 Physic II 1020 &1110 (5) HS 4000 Pathology (4) EXS 4960 Practicum** or EXS 4995 Directed Research** (3) EXS Electives (4) TOTAL CREDITS (16)	*new course ** revised course
	Approved electives credits at 3000-4000.	TOTAL CREDITS FOR DEGREE 124 (WRT 1050 not counted and diversity requirement is met with one of the gen ed requirements)	