

Exercise Science Program Review

College of Education

Dakota State University

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External Reviewer:

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Executive Summary of Findings

Overall, the Exercise Science (EXS) Program at Dakota State University is on the right track for recruitment and retention of EXS majors. Records show that starting in fall 2003, 33 majors were enrolled and currently (spring 2010) 85 students are registered as EXS majors. This latest enrollment number seems to have remained steady since spring 2009, and the future appears to be bright as EXS faculty capitalize on the latest trend in the field, specifically a push toward sports performance versus health-related fitness; although the faculty remain committed to a broad and flexible curriculum. Furthermore, the EXS Program faculty recognize that 34 percent of sport enhancement facilities across the nation now require advanced degrees in the field of EXS (e.g. M.S. degree) in addition to national certifications from the American College of Sports Medicine (ACSM) and/or the National Strength and Conditioning Association (NSCA). In light of this, the EXS faculty are attempting to become an NSCA endorsed curriculum, which will bring national recognition to the program and potentially serve to recruit and retain high-quality students.

Another key ingredient to the continued success of the EXS Program is the development of the Human Performance Lab, which notably provides “hands-on” experiences for all majors and an opportunity to learn advanced exercise assessment techniques to help build a better resume prior to graduation. The lab, which includes numerous, new pieces of equipment (within the last 1-2 years) such as a gas analysis system (via Parvo Medics True One System); anaerobic power testing ergometer (via SRM and Monark ergometers); isokinetic measurement device (via a LIDO Isokinetic Dynamometer); and a variety of flexibility, range of motion (ROM), and balance modalities, among other inventory, is poised to enhance the quality of learning and content of the EXS curriculum. The lab is already becoming a student-driven entity that perpetuates student motivation for advanced learning and career goals, as well as providing a data collection area for advanced undergraduate/faculty research. Most of all the lab will serve to recruit and retain excellent and passionate students.

Integral to the development of student learning in the EXS Program are the various relationships with outside entities currently being cultivated, such as internships with various external sites (e.g. Sanford Wellness Center / Power Clinic and Madison Community Center) and cooperative partnerships with other local area hospitals, wellness and fitness centers, and clinics. Of note, a faculty member in the EXS Program has established a relationship with the South Dakota State University Health Promotion Program. Relationships such as this will help feed DSU undergraduates to various institutions for advanced degrees and expose current students to the possibility of outside projects and collaboration.

From my perspective, the EXS curriculum is thorough and engaging. Not only is the coursework extensive in exercise and sport science information, it provides EXS students with a broad knowledge of biology, health, and physical education. Additionally, EXS students wishing to pursue advanced degrees in allied health fields (e.g. physical therapy, occupational therapy, or

physician assistant programs) are identified early and encouraged to not only complete a year of anatomy and physiology from the Biology Department, but also coursework in general chemistry, physics, psychology, statistics, and math. In order to perpetuate the proper direction of each student's yearly coursework, EXS faculty schedule advising times for each undergraduate in a one-on-one format to ensure the completion of suitable prerequisites prior to EXS students applying to advanced programs of study. Of course this type of one-on-one mentoring serves to strengthen recruitment and retention of students. Thus, I am certain that DSU and the EXS Program will continue to draw quality, young scholars.

In summary, DSU's Exercise Science Program has met goals from the past program review. The EXS Program's leadership is solid. The EXS faculty are genuinely interested in their program's future and are striving to streamline curriculum and add beneficial experiences, such as the development of the Human Performance Lab and relationships with outside sources for collaboration, internships, and first-rate hands-on experiences. Also, the administration is tracking EXS student numbers, encouraging and supporting faculty research, and looking to the future to continue to strive for excellence and a well rounded experience for all DSU EXS majors.

A summary of recommendations for improvement are:

1. Tweak the curriculum to include a standard major where students can pick and choose additional EXS electives or other courses outside the major besides chemistry, biology, statistics, and/or extra math. This would provide a more general curriculum for students not wishing to pursue an advanced degree or an allied health profession (e.g. physical therapy). With this type of additional emphasis, retention and recruitment of a broader range of students might occur.
2. Potentially, look to hire an additional faculty member to complement current faculty. This person may be more strength and conditioning oriented with an eye for sport performance. Current faculty are able to also wear the strength and conditioning hat along with health-fitness, motor learning, and clinical expertise. Thus a sport specific faculty member may serve to add depth to the NSCA endorsement of the EXS Program.
3. Attempt to better assess EXS student graduates (within a year of graduation and/or employment) and employer perceptions of hands-on skills in the "real world." In other words, streamline surveys (or planned phone calls) to the aforementioned entities to include specific questions about exercise testing and prescription proficiency. With this type of feedback, the EXS Program will be able to better gauge the value of "hands-on" experiences and potentially drive up the quality and visibility of the program in the eyes of student and future employers.
4. Include a clear mission statement related to the EXS Program on the EXS website with easy access to faculty profiles (specifically on the EXS Program weblink). Also, attempt

to include carefully planned and presented information about the Human Performance Lab, sample student-faculty research, and exercise and sport science conferences attended on the EXS website (use precisely crafted bullet points about the program, curriculum, hands-on experiences, and research along with clear pictures of equipment). This will help provide a clear understanding of the program to prospective students and give the EXS Program better visibility locally and nationally as individuals search the web for exercise and sport science programs and/or information. In other words, if the EXS Program adds a “wow” factor to the web, the potential for growth is enhanced and technology may be better utilized.

5. Possibly, institute a minimum 2.75 GPA for entrance into the EXS Program. Thus, institute a formal application process (via submission of a detailed portfolio) by the sophomore year or earlier. Students who may be rejected from the program should reapply up to “3” times.
6. Continue on the path to implement an NSCA endorsed exit exam and be sure to address knowledge, skills, and abilities related to this exam throughout the curriculum or in the form of a senior level seminar.

Focus Areas for the Reviewer

Program Goals and Strategic Planning

Since the 2004 Exercise Science Program Review, the DSU EXS Program seems to have made numerous strides toward meeting indicated goals, such as improving or changing curriculum and providing well rounded student experiences in the field of EXS by growing the Human Performance Lab and forming partnerships with local and national institutions. Additionally, changing the name of the program to Exercise Science as opposed to Fitness-Wellness Management seems to have solidified name recognition across campus and the South Dakota region. In support of this and mentioned prior, the EXS Program has grown in student numbers (since 2004) and is poised to continue this positive growth trend. Moreover, EXS faculty are aware of the need to seek external funding for various personal and student-driven research projects; and currently one EXS faculty member is seeking a \$30,000 grant to develop hands-on ventures with students. Thus, in view of these positive trends in the EXS Program, it is evident that program goals are appropriate and attainable with an eye to the future.

Because the EXS faculty encourage students to utilize their personal computers, especially for note taking and searching data bases, it is clear that the EXS Program is aligned with DSU’s designation as an information technology university. Furthermore, because the EXS Program is growing based on data-informed decisions, research opportunities for students, effective communication, unwavering support for student success, and other strategies, the EXS

faculty and leadership personnel seem to be choosing appropriate program goals relative to the institutional mission, values, and commitments (as stated in DSU's Strategic Plan, 2007 – 2012). To underscore this, I believe the EXS Program, its faculty, and administrative leadership are closely aligned with institutional goals, such as optimizing on-campus student enrollment, enhancing program quality, increasing student retention, advancing applied research possibilities, developing new revenue strategies (i.e. seeking external grants), and promoting increased EXS Program visibility locally, nationally, and internationally.

Foremost in the advancement of quality EXS student experiences and professional growth is the identification of national trends in the field of EXS. In particular, the EXS Program is seeking endorsement by the National Strength and Conditioning Association (NSCA) and has structured an exit exam to reflect knowledge, skills, and abilities related to the NSCA's Certified Strength and Conditioning Specialist (CSCS) certification. I believe this to be a wise move in that students will be expertly prepared to seek and gain a gold standard certification in their chosen field prior to or immediately after graduation. With a CSCS certification students will become more marketable and over time recognizable as leaders of their profession. In turn DSU will gain greater visibility throughout the EXS field while maintaining a rigorous and beneficial curriculum. One word of caution, however, is to avoid becoming overly focused on one particular certification. The American College of Sports Medicine (ACSM) or NSCA Certified Personal Trainer (CPT) endorsement should be considered by the junior year and the ACSM Health-Fitness Specialist (HFS) certification considered by the end of the senior year (along with the NSCA's CSCS certification). Additionally, although I strongly believe the EXS Program to be on the right path in regards to NSCA endorsement, I caution the program against overloading the sport performance aspect of the field at the expense of clinical and health-fitness knowledge. Despite this observation, I certainly recognize the overall expertise and motivation of the current EXS faculty to provide well rounded content experiences to all EXS majors. Thus I believe current content in the curriculum to be in balance between sport, health-fitness, and clinical subject knowledge.

In closing, it seems that the EXS program is nicely aligned with current trends in the field. By ensuring the quality of EXS graduates via a well known and structured exit exam that is applicable to numerous populations, underscores the value of graduating from DSU as an EXS major.

Program Resources

From my initial perspective, the EXS faculty and its leadership are currently meeting expectations from the previous program review (2004) and positioned expertly to meet program goals, such as recruitment and retention of EXS students; enhanced curriculum with the addition of Biomechanics, greater hands-on opportunities, lab experiences, improved internship administration guidelines, and the addition of a second EXS faculty; and greater development of the Human Performance Lab with new, "state of the art" equipment. Additionally, as alluded to

earlier, the addition of another EXS faculty seemed to be instrumental in offering more courses and streamlining various hands-on, internal (lab) and external EXS student professional development opportunities.

Furthermore, I believe staffing levels to be adequate currently but potentially problematic as the program grows and personnel begin to focus attention on sport performance with the NSCA program endorsement and CSCS oriented exit exam. These changes are excellent and will serve to underscore the quality of the program. However, adding a third EXS faculty member might be one strategic move to hire a sport specific expert (such as someone well versed in and with strong ties to NSCA/CSCS curriculum) to push forth the EXS personnel's intent to strengthen the "science" of their program and ensure DSU EXS majors are a step ahead of other undergraduates in the same field. Currently one EXS faculty member has his CSCS certification, which underscores commitment to the EXS Program direction and overall quality. The aforementioned faculty member also has expertise in clinical and health-fitness course material and would be well complemented by a third EXS faculty person who may be NSCA oriented to a greater extent.

From a classroom standpoint, DSU is nicely situated. In particular, the rooms in the Kennedy Center are spacious and equipped with up to date computer systems. Students routinely bring their personal computers to class and have access to the internet and lecture notes. Nearby is the Human Performance Lab with excellent space and modern exercise testing equipment. The addition of the LIDO, Parvo Medics gas analysis system, SRM ergometer, and balance bows, among other inventory, has underscored DSU's commitment to excellence in the EXS Program. New EXS faculty have added additional expertise in the way of grant writing and creative research programs that involve undergraduates in the lab. Continued financial support is mandatory in order to perpetuate the positive momentum shift in the lab over the past several years, including the sustained support of undergraduates in viable and up to date research projects that will serve to heighten DSU's image locally, nationally, and internationally. Already, DSU students have visited an Australian sports medicine conference and are making an impact regionally and nationally at ACSM sponsored conferences. This is a major asset to the EXS Program and should also be carefully cultivated with administrative funds and/or resources.

Program Curriculum

In regard to EXS curriculum, the current faculty have made strides to increase course rigor. Students and employers have clearly recognized this when questioned on various surveys. I suggest that the EXS Program and personnel continue to measure graduate and employer satisfaction in order to gauge the effectiveness of curricular changes and possibly improve or fine-tune hands-on activities if required. Already because of extensive lab equipment improvements and the procurement of outside internship resources, curriculum has been strengthened, especially because of the renewed applied nature of some courses where students get specific training in more advanced exercise testing techniques and measurements. Also, the

use of the Community Center seems to be an adequate and convenient avenue in order for EXS students to execute hands-on exercise training scenarios with various community populations (from young to old and sedentary to fit).

A great strength of the EXS curriculum and its personnel is the awareness of preparing EXS students to enter allied health paths, such as physical therapy, occupational therapy, and physician assistant programs locally or nationally upon graduation. Additionally, the faculty have an eye for preparing EXS students for a Master's of Science degree and beyond, especially because DSU as a whole and the EXS Program specifically are outfitted to support applied research. Additionally, collaboration and communication with DSU's Biology Program is essential to ensure solid pre-professional preparation to all EXS majors. This is currently on-going and appears to be a collegial relationship.

Technology Integration

Because DSU is a designated computer technology institution in the state of South Dakota, it is not surprising that EXS students and faculty have embraced this in everyday life at DSU. Upon conversing with EXS students, they were very forthright about their easy access to computer technology inside and outside the classroom. Also, the use of technology across campus was impressive. Overall, DSU and the EXS Program are very well versed in technology integration, including the implementation of online courses and the revamped Human Performance Lab.

Program Assessment

As underscored prior, DSU's EXS Program is accurately positioned to become a visible leader in the area of undergraduate preparation in the field of sport and exercise science (in the South Dakota region and beyond). Current graduate and employer surveys are excellent and appeared to have generated useful and encouraging information/feedback. I suggest the program personnel continue with this course of action with renewed vigor to consciously gather useful post graduate data to monitor curricular changes, goals, and outcome measures. One additional key point may be to assess EXS student and employer feedback concerning skill preparation related to exercise testing and prescription in the "real world." It's important to note whether or not student versus employer perceptions of preparedness are similar related to the administration of various types of exercise tests and prescriptions for a multitude of populations. If this can be accurately ascertained, then any dissimilar notions between DSU students and their employers can effectively be addressed. The hope, then, is to continually drive the quality and visibility of the EXS Program upward.

Next, I believe that EXS faculty and leadership personnel have expertly and with good intention addressed trends in the exercise and sport science field. In other words, because the program is aligning itself with a highly visible organization, such as the NSCA, potential for greater national recognition exists. In turn this may lead to sustained or even better job placement

for all graduates. Furthermore, the recognition of the need for pre-professional and graduate level preparation in the ever changing field of EXS should keep the EXS curriculum flexible and attractive to a wide range of students. Of note, it might be advisable to add a standard EXS major for undergraduates not concerned with advanced degrees in the allied health field or graduate school. The standard curriculum may include more EXS electives and less biology, physics, and chemistry.

Student Support / Student Enrollments

Not much in the way of improvement is noted for student support and enrollment. The main concern would have been lack of a “wow” factor concerning a viable and visibly attractive performance lab or area of exercise testing and prescription specialization. Thus, because of the current depth and breadth of equipment in the lab, no need to address this issue exists. Notably, current EXS students were impressed with the lab and a few had been promised such upgrades on their recruiting visit to DSU (a few years back). They were doubly impressed that EXS faculty held true on that promise.

In terms of enrollment, because student numbers have doubled since 2004, the EXS Program has progressed encouragingly. Additionally, with attendance at the Northland ACSM regional conference, the ACSM Health Fitness Summit, and an international conference in Australia all within the past year, global recruiting has begun. Moreover, visits to local hospitals, clinics, exercise businesses, and institutions have helped increase awareness about DSU on a more regional level.

Lastly, related to student advising, easy to follow and straight forward checklists have been created. It’s also a tremendous bonus that students meet one-on-one with faculty. Emphasis should be placed on identifying student career goals as early as possible in order to direct them toward allied health professions, graduate school, or a job in the field.

Program Strength and Areas for Improvement

Program strengths are many and varied. Foremost, EXS students perceive their area of study to be rigorous, interesting, and hands-on. The major has evolved over the past few years to include a broader curriculum and numerous opportunities in the Human Performance Lab with the addition of valuable equipment. EXS faculty have pushed forward student research and professional development by presenting at and attending regional and national conferences related to exercise and sport science. Partnerships with local and national institutions have recently been cultivated and EXS students encouraged to find valuable internships. Additionally, EXS faculty are seeking NSCA endorsement for their program and aligning the graduate exit exam to reflect knowledge, skills, and abilities pertinent to the CSCS certification, a very marketable resume builder for young students. Along with NSCA endorsement and a CSCS content oriented exam, the EXS Program personnel are keeping an eye to ACSM certifications, health fitness topics, and clinical coursework. This serves to solidify a well rounded curriculum

and by including a flexible EXS major four year plan, students may choose to enter allied health programs and/or attend graduate schools once they graduate. Lastly, because of diligent student, employer, and faculty feedback over the last few years, the EXS Program has shown growth and apparent attainment of providing a well rounded and thorough curriculum that aligns with program objectives.

With the above positive program attributes in mind, the EXS faculty and leadership personnel have only minor improvements. For one, the statement of a clear mission statement (or continued development of the current one) on the EXS website and other marketing tools related to program objectives/goals will help form an immediate and cohesive opinion of the program and its faculty. Secondly, in relation to program assessment and the use of student and employer follow-up surveys, I suggest EXS faculty focus on feedback related to student skills (such as exercise testing and prescription expertise with various populations). Feedback such as this should also be determined during and right after all internships. Thirdly, the EXS faculty should not lose sight of preparing students for a broad and long-range career that may include entering graduate school, an allied health program (e.g. physical or occupational therapy), or becoming a sport, exercise, and/or clinical practitioner in the field of exercise and sport science.

Having mentioned this, I believe current EXS faculty are well aware of this and incorporating an appropriate breadth and depth of overall coursework and hands-on experiences. Fourthly, the inclusion of a webpage or two about the Human Performance Lab should be integrated into the EXS website that is easy to read and digest by student consumers along with clear pictures of all new equipment. Lastly, if possible, the EXS Program personnel should consider adopting a GPA of 2.75 as the minimum requirement needed to graduate or apply to the program. If students do not attain this landmark by their junior year, then perhaps a second major can be created that includes general EXS course electives, such as a standard major without the need for students to complete chemistry, physics, or other pre-allied health field coursework. The standard major, then, would cater to students not intending to continue beyond the undergraduate level and should serve to help grow the program.

Specific Issues Identified by the University: Program Curriculum, Faculty Workload, and Technology (hardware and software)

In general the above topics have been addressed in the overall report. To summarize, I believe the EXS curriculum to be thorough, challenging, and flexible. The inclusion of labs, student-based research, hands-on experiences, and collaborative efforts with outside entities for internships and possible research are stellar. Program curriculum is further strengthened by the inclusion of biology, chemistry, statistics, and math requirements to underscore the preparation of students for pre-allied health fields. One area for improvement may be adding a standard major which allows students not interested in graduate or allied health programs to focus more on EXS electives versus biology, chemistry, and statistics. Although these courses are highly

desirable in a liberal arts education, more students may be attracted to complete the EXS major without them.

Faculty workload may become a concern. At present student enrollment in the EXS Program is at an all time high. Moreover, with new energy in the program because of student-based research, national and international travel to conferences, and activities related to the improved Human Performance Lab, student enrollment should steadily increase. Thus to maintain program quality and most of all to ensure student satisfaction with class size and ease of taking certain courses, adding another faculty member is a concrete way to bolster growth without loss of quality or student satisfaction. In turn, student recruitment and retention should remain steady and without difficulty.

In relation to hardware and software, it seems the EXS Program is holding its own within the college and throughout the university. For instance, the use of Dartfish, a motion analysis software package, is currently being utilized to a greater extent by EXS faculty. This is a positive step forward in maintaining the use of technology within the program and to ensure a quality experience in coursework such as biomechanics or lab techniques. Hardware seems to be current and in demand as students utilize their own laptops in classes and the lab. In fact, new hardware was purchased for the lab, including a Parvo Medics gas analysis system along with computerized cycle ergometer equipment. My suggestion is that the EXS program should continue to evaluate the need for other types of helpful hardware and software set-ups in order to continue down the path of utilizing advanced technology, which is directly in line with the university's mission.

Please do not hesitate to contact Scott Drum at 970-371-2620 with questions and/or concerns about the above report.