From the Chair ~ William J. Pierce

Greetings from the Health Sciences (HSC) Department. Yes, we have changed our name. The faculty deliberated an entire year before deciding to simplify the title by dropping “Exercise.” While the department still teaches exercise science courses and promotes physical activity as a vital component of a comprehensive wellness program, we also recognize that most of our graduates are pursuing health-related careers. The label, Health Sciences, accurately describes the content of our curriculum and fits with the education the majors receive. The Furman administration and our majors embraced the name change.

The department has never before begun the year with as many majors. HSC is the second most popular major at Furman. We have 56 senior and 49 junior majors. The department is pleased to have strong interest in the major, but that interest has placed an increasing demand for spaces in the HSC courses. We have had to restrict enrollment in many of the courses to majors because there are many non-majors requesting to be enrolled.

The class of 2010 exemplifies the broad interest in health-related careers among our majors. The most recent graduates are pursuing careers in medicine, dentistry, physician assistant, physical therapy, nursing, chiropractic, occupational therapy, mental health counseling and public health. In addition, graduates began coaching and military careers. More than 20% of the 2010 class was graduated with honors. Members of the HES Class of 2010 were inducted into Phi Beta Kappa and Omicron Delta Kappa.

Those of you who have graduated in the past 25 years know that I invite seniors to meet with me for an exit interview a couple of weeks before commencement. These conversations with graduating seniors are a valuable assessment tool. The overwhelming response from the Class of 2010 was that they “loved the department and Furman.” They were unanimous in responding “yes” to a question about whether they would choose to major in HES, if they were to make that choice again.

In particular, they cited the interaction with departmental professors as what stood out as special. They often elaborated on how the professors seemed to care about them, reached out to them on a personal level and were always willing to help them with their studies, research, etc. Nearly every interviewee began by talking about how much the departmental professors in general meant to them or discussing how one professor in particular had made a major impact on his or her life. The students indicated that they had received an excellent mixture of academic challenge, preparation for future studies and practical application. All in all, the interviews provided a strong endorsement of the department and institution.

The department recently received good news from the Dean of Faculty. We will be able to add a new faculty member for 2011-12. The department’s popularity, as well as the department’s good reputation, contributed to its having been awarded an additional faculty member. We will begin recruiting with the goal of having a new hire by the end of the Fall semester.

My professional and personal activities still focus on running. The Furman Institute of Running and Scientific Training (FIRST) conducted two Spring Adult Running Retreats, a Cross Country Camp for High School runners, laboratory assessments, e-coaching and responded to daily messages from runners around the world. The Adult Retreats have attracted runners from 37 states and four foreign countries. Run Less, Run Faster remains among the top five selling running books and has been translated into German with the title Lauft raining mit System and Portuguese with the title Treine Menos, Corra Mais.

Scott Murr and I will be in New York at the Runner’s World Marathon Expo promoting FIRST and the book. On Sunday, we will attempt to make our way through all five boroughs following the blue line to Tavern on the Green in Central Park.

“The label, Health Sciences, accurately describes the content of our curriculum and fits with the education the majors receive.”
Moments from the Molnar Lab ~ Ray Moss

Did someone ask if they could get their body composition analyzed in the Molnar Lab? Well, the answer is a definitive yes. During the past year, the Molnar lab has added both the Life Measurement’s BOD POD and the General Electric’s Lunar body composition systems. Actually, the Lunar system is located in the PAC, but the Molnar Lab takes all the credit it can.

The BOD POD uses air displacement to measure a person’s body volume. This is accomplished by having a person enter the BOD POD and measuring the pressure changes between the two chambers that compose the BOD POD. As you may or may not recall from Exercise Physiology, Boyle’s law defines the relationship between the pressure of a gas and its volume. After calibrating the BOD POD with a known volume, the system can accurately measure the volume of an unknown body by comparing the pressure changes of the unknown body to that of the calibration volume. The system then measures total gas volume of the lungs, using a breathing tube system, and with this information the system calculates both lean and fat body mass. The measurement takes about 10 minutes and no one has to blow to residual volume while underwater.

The General Electric Lunar system is Dual energy X-ray absorptiometry (DXA), which uses two X-ray beams with different energy levels to measure bone mineral density. The system recognizes the difference between lean tissue, fat tissue and bone. Using the program’s algorithm, lean body mass, fat mass and bone mineral density are determined. Participants are given a print out that lists each of these factors along with information about their results as compared to a normalized population. Although radiation is involved in the procedure, the level of radiation exposure is far less than that experienced during a standard chest X-ray, which poses no health risk for individuals who are evaluated using DXA technology.

Which is the best method to have your body composition determined? Ella Hollar, the recipient of the Jerry R. Thomas Summer Research Grant, is working on that question right now. Ella is in the process of measuring 50 individual’s body composition using the BOD POD, Lunar DXA, hydrostatic weighing and skinfolds. Following data collection, she will apply the appropriate descriptive and inferential statistics to let us know what she finds out. We will keep you updated on the outcome.

The Howard Hughes Medical Institute (HHMI) has awarded the Molnar Lab. Sarah May Lammert is studying the effects of the FIRST running program and plyometrics on the running economy of females. Hannah Woodard is evaluating the effects of age on the biomechanics of running gait in males and Jason Jakeila is comparing male sprinters and long distance runners on body composition, maximal aerobic capacity, lactate threshold and running gait mechanics. The HHMI awards are prestigious for both the student and the department. Each of these students is a sophomore, meaning we will have several years of productivity during their tenure as HSC majors.

Dual energy X-ray absorptiometry (DXA, previously DEXA) is a means of measuring bone mineral density (BMD). Two X-ray beams with differing energy levels are aimed at the patient’s bones. When soft tissue absorption is subtracted out, the BMD can be determined from the absorption of each beam by bone. Dual energy X-ray absorptiometry is the most widely used and most thoroughly studied bone density measurement technology.

New Research Projects ~ Tony Caterisano

Dr. Tony Caterisano and Dr. Ray Moss are planning two research projects this year. One involves testing a device called the SpeedFlex™, a resistance training machine that reportedly improves speed and power. They are testing the Furman Men’s Varsity Basketball team this spring, by training half the team on the SpeedFlex™ and the other half using traditional weight training. Players will be tested on the following tests: 10-yard dash, vertical jump, an NBA agility test, standing long jump, medicine ball throw, 1RM bench press and 1RM squat. In addition all players will be tested in the new DEXA scan to measure changes in muscle mass in the legs and arms, as well as changes in body composition. Several students as well as Coach Steve Mannino, the Head Strength Coach are participating in the study.

The second project will look at the effects of eating two types of meals (one which is 30% fat and another that is 10% fat) on DEXA scan (Dual Energy X-ray Absorptiometry) results. Subjects will be tested in an 8-hour fasted state and then will eat one of the two meals, after which they will be scanned again. They will then return the next day to consume the other meal after being scanned in an 8-hour fasted state. The size of each meal will be proportioned to the subjects BSA. Thus far no other research has studied the effects of eating immediately prior to DEXA testing.
Big News ~ Alicia Powers

Big news on many fronts this year. The Robert Wood Johnson Foundation grant I was awaiting notification from last year was awarded! This grant and match funding provide about a half million dollars in funding to combat obesity through policy, systems and environmental change. Therefore, Furman’s HSC department, the YMCA of Greenville, and Piedmont Health Care Foundation have led the effort in developing strategies to address obesity from a policy and environmental perspective within three low income communities. These same partners along with Clemson University are awaiting notification from another grant through USDA to provide funding for this same work at the broader county level. If you live in Greenville County or the surrounding area, be on the watch for media campaigns and opportunities for action at the beginning of 2011 to help make the healthy choice the easy choice for Greenville residents.

In addition to providing leadership on grant writing and administration for policy, systems and environmental change to combat obesity in Greenville County, I continue to work on the Supplemental Nutrition Assistance Program (SNAP) study I am conducting with some of our majors. This study will compare purchasing choices of those receiving SNAP assistance and those not receiving SNAP assistance.

Another duty I fulfill on the HSC hall is the HSC Majors Club advisor. Many of you have participated in the HSC Career Night. This event, sponsored by the HSC Majors Club, invites HSC alumni back to campus to discuss potential careers with current majors. If you are interested in assisting with this during the current or future academic years, please contact me at alicia.powers@furman.edu.

And big news in my personal life this year as well... My husband, Sam, and I welcomed Cole William Powers on September 10, 2010. He weighed 6 pounds, 7 ounces and was 19 ¾ inches. He is a healthy, happy baby boy. Sam and I are enjoying our family time with him this semester. Timber, our Golden Retriever, is adjusting to sharing his time with another family member. They are both very spoiled and keep us very busy.

As I start my fourth year at Furman, I am amazed at how fast my research and service have taken shape. My hope is that this work will provide HSC majors many opportunities to see Health Sciences in action. I hope all of you are finding your HSC major and subsequent careers as rewarding and demanding as I have.

An Update on the Patrick Clan ~ Tim Patrick

It’s hard to believe that my oldest child, Brynn, is now a freshman in high school and a starter on the junior varsity volleyball team. It’s just as hard to believe that my middle child, John, is in his middle year of middle school, and plays D football, much to the chagrin of my wife. It’s even harder to believe that my youngest child, Lauren, is in her last year of elementary school and already following her older sister’s lead in learning to play volleyball. Needless to say, my wife, Julie, and I are constantly scattered (physically and mentally) between schools, late afternoon practices, and evening games, though we greatly enjoy the excitement and memories of this time in our lives.

Despite our hectic family schedule and work demands, I still try to squeeze in a few days of cycling and weight lifting each week. Yet, it is mostly cycling that continues to draw me. In fact, I have a worrisome, possibly unhealthy, fascination with hills. I daydream about them (often when I shouldn’t), suffer on them every chance I get (usually when I shouldn’t), and, according to my family, talk too much about them (every time I shouldn’t). Inevitably, a passion for a thing causes one to question a lot and to search for others who might help answer the questions or who might at least share the same quirky passion and ask the same esoteric questions. I found that person. During the summer of 2009, I worked with Craig McKinney, an advisee and member of the Furman cycling team, on a Furman Advantage Research project investigating the effects of gender and pedal cadence on work efficiency and cardiovascular responses to cycling. Craig and I published the initial findings in the journal, Medicine and Science in Sports and Exercise, and both presented the findings this past June at the annual conference of the American College of Sports Medicine in Baltimore, Maryland. Craig and I will continue to collaborate on article submissions even as Craig soon begins medical school at MUSC. Undoubtedly, the findings of this research study and the lure of cycling will continue to drive my research and exercise pursuits as I think about the next big hill.
Getting Physical ~ Julian Reed

The past two years have been extremely busy and exciting. In June of 2009, I began working with Legacy Charter School, located in downtown Greenville to assist the school with developing a comprehensive approach to wellness and active living. The school provides each child kindergarten through 9th grade 45 minutes of physical education each and every day. Our first year following the implementation of this program yielded tremendous results. Many people don’t realize that only 4% of elementary schools, 8% of middle schools and 2% of high schools in the United States provide daily physical education. Legacy Charter School is committed to the health and wellness of its children and is the only school in Greenville County to provide 45 minutes of physical education 5 days per week to all children.

Physically active children tend to have greater academic achievement and enhanced cognition. Physical activity has also been documented to support learning capacity along with stimulating structural changes in the hippocampus region of the brain, which is an important area for memory. This past summer I analyzed the effects of providing 45 minutes of daily physical education on the cognitive and fitness performance of its students during the 2009/2010 academic year; and found that Legacy Charter School students observed significant increases in 77% of the cognitive measures at their post-test assessments, compared to only 29% for control school students. Legacy Charter School students additionally had significant improvements in 75% of the fitness measures by the end of the school year, compared to only 6% for control school students. The prevalence of overweight and/or obese students at Legacy Charter School significantly DECREASED while the prevalence of overweight and/or obese students at our comparison schools significantly INCREASED. Legacy Charter has two fitness centers to be used by the children during the day for physical education and is open during evening hours Monday through Friday for all parents, faculty and staff affiliated with the school to participate in physical activity. The school employs three Furman graduates in Health Sciences as fitness specialists along with many of our undergraduates to develop individualized exercise programs. In addition, the school recently redesigned the food service program to provide a healthy menu of foods for our children.

I continue to work with the Prevention Research Center at USC to evaluate the Mary Black Rail/Trail and Wadsworth Trail in Spartanburg. Additionally, I am a co‐investigator on an EPA grant examining trail‐use on the Greenville Hospital Swamp Rabbit Trail that connects Traveler’s Rest to Downtown Greenville. Many Health Sciences majors continue to assist me to evaluate trail‐use on both of these projects. I remain physically active by running and biking. If you are ever in the Greenville area, please stop by the PAC for a chat.

Pearman News ~ Si Pearman

I am very excited about introducing three brand new courses to the department’s offerings and adding a fourth “new” course to my classroom teaching. Along with continuing to teach Wellness Concepts this fall, I have introduced an “Advanced Principles of Public Health” course to the department’s curriculum. I am very excited to have the opportunity to build further upon the foundational concepts of the introductory course and particularly offer students who are interested in MPH degrees a more in depth study of health behavior change theory, epidemiology, health care, and social marketing for group behavior change. In the spring semester, I will be teaching a freshmen seminar entitled the “Ancient and Modern Olympics” as well as taking over the teaching stewardship for the “Community and Environmental Health” course that Drs. Powell and Yockey began prior to their retirements. This course will attract both majors and non‐majors as it is part of Furman’s Environmental Studies Concentration course group. I will also be introducing a new public health special topics course in the May Experience term pending faculty approval. I am also working with a senior major on a large cancer epidemiology project which we hope to have completed for a presentation and publication by the end of the year. Much of this work is the culmination of my sabbatical project work.

In addition to my service to the department, I am serving on a number of university committees right now including the Substance Abuse Committee that is monitoring the new age 21 alcohol policy for North Village and serving as a member of a Student Life Strategic Planning Task Force that is evaluating all programs and services provided for Furman students. My family is doing well. My son continues to enjoy being a student at Samford University in Birmingham, Alabama, and my daughter is making great progress in high school.

I enjoy getting your e-mail updates, and I will also be at the Alumni Drop-in, but will have to leave around 11:30 AM for another Homecoming even that my wife and I help coordinate each year.
You can see from the postings by my colleagues and friends that the HSC/HEH/PFE Dept (whatever) is still a pretty dynamic place that has lots to offer. Definitely getting a little older and slower on my end of the hall - but still managing to keep a few irons in the fire. This past spring term we introduced a new course, *Physiology of Aging*, into the HSC curriculum. As part of the course (and in the spirit of engaged learning) students had the opportunity to spend quality time with the residents at The Woodlands at Furman Retirement Community. This fall I’m teaching a revised *Clinical Physiology and Rehabilitation* course and students are spending time at the Greenville Hospital System observing patients in Cardiac, Pulmonary, Diabetes, and Oncology Rehabilitation Programs as well as patients in Furman’s Sportsmedicine / Physical Therapy Program. Sometime in the near future, Dennis Haney (Biology) and I are looking to offer the *Pathophysiology* course again for students interested in pursuing careers in medicine or allied health fields.

In addition to getting back on track with the programs at GHS HeartLife, we’ve got a great group of HSC majors studying chronic disease risk factors (for CVD, Diabetes, & Metabolic Syndrome) in Furman undergraduates. For the past decade, we’ve been collecting lipid data from students (N=4000+) enrolled in the *Wellness Concepts* course and this past year data collection was expanded to include the spectrum of risk factors for common chronic diseases. HSC majors Jessica Lawson, Matt Colna, Amaya Gunasekera, Vincent Marsh, and Andy O’Neil are conducting these studies, the goal of which is to help students identify their risk factors and begin interventions. Jessica, Matt, and Amaya recently submitted their abstracts for the SEACSM meeting to be held in downtown Greenville this upcoming February.

This past academic year I’ve also had the opportunity to continue working on projects addressing childhood obesity in Greenville County. Most notable was working with Dr. “Rudy” Reed’s Fuller Normal Charter School Project and assessing BMI and body composition changes in elementary school students.

Finally, a former Gator colleague Mike Welsch (LSU) and I began the slow and arduous process of co-editing a new edition of the textbook “Physical Activity in Health and Disease: Evaluation and Prescription for Prevention and Rehabilitation.” The theme of the textbook is clinical physiology and will focus on the role of exercise as medicine.

On the home front, my Superwoman wife and I are enjoying our rugrats growing up and becoming more independent. Our oldest daughter (Kasey) is in her senior year at Furman finishing up as a Communications and Business major and will be spending her senior spring term in the study abroad program in Scotland. Our son, Sammer the Hammer, is filling out applications and will hopefully start as freshman Paladin next fall. The twins, Austyn & Colby, will turn nine this December and remain out of control.

As always, I encourage former grads visiting downtown Greenville to stop in and chat with me at Connolly’s Irish Pub & Eatery and enjoy some tasty chow and a frosty beverage. And don’t forget the 7P Rule . . .

---

**Human Energy to Renewable Energy ~ Scott Murr**

The Class of 2010 Class Gift was the installation of the revolutionary ReRev™ technology. The class chose ReRev™ for an affordable, immediate impact that’s environmentally friendly and allows people working out to participate the campus’ commitment to sustainability.

Kinetic energy from an elliptical workout is converted to DC (Direct Current) and sent to the ReRev System. ReRev converts the DC current into AC (Alternating Current), the form of electricity used by homes and businesses.

Fifteen ellipticals were connected to the ReRev system this summer. When students workout on ellipticals, their kinetic energy is harnessed and converted to electricity which is added back into the building’s energy grid.

This helps in several ways. Not only does this help lower the PAC’s overall use of purchased electricity but because each of the ellipticals normally dissipates the generated heat in little radiators (that can reach 180 degrees) and warming the room, the system also means slightly lower air-conditioning costs. Thanks to the ReRev system, the PAC’s carbon footprint is reduced making the Furman Fitness Center the first human power plant in South Carolina.

An average half-hour workout on the fitness machine produces enough electricity to power a laptop computer for one hour or compact fluorescent light for 2½ hours.

While the ReRev System was installed in July, the system won’t be complete until Spring semester when the electricity-generating information is displayed on a video screen in the PAC. The display will include the energy generation from ReRev and solar system. Seeing how much energy they are contributing to the PAC may help keep students motivated to workout regularly during their tenure on campus.

Thanks to the Class of 2010 for leaving behind a legacy that will last and renew.