Working toward a New Understanding of Human Health

Exercise scientists develop unique insights into major diseases

Depression. Obesity. Chronic inflammation. These medical conditions draw researchers across the spectrum of health, social, and physical sciences.

But there’s a department in the School of Arts and Sciences that has staked out a unique approach to studying all of those afflictions.

Welcome to the Department of Exercise Science and Sport Studies.

The fast-growing department serves more than 1,000 undergraduates, offering three science options and another in sport management.

“It has grown by leaps and bounds,” says acting department chair Neil Dougherty. “The pattern of medicine today, which looks at the whole body rather than just isolated aspects of one’s life, has had a tremendous impact on our field.”

Professors Brandon Alderman, Sara Campbell, and Greg Henderson are among the newest faculty members in the department’s science concentrations. The three bring a passion for teaching and research, and a commitment to addressing major public health issues through the lens of exercise.

In Alderman’s recent research, for example, students battling depression engaged in brisk aerobic workouts as well as meditation at campus recreation centers.

“I am particularly interested in the effect of exercise on mental health,” says Alderman, who is collaborating on the study with faculty from the psychology department and the Center of Alcohol Studies.

As an exercise scientist, Alderman’s research mission was to acquire data about changes in the students’ cardiovascular responses, and the electrical activity of their brains using EEG.

(continued inside)
A Once Reluctant Student Finds Purpose in Eclectic Pursuit of Knowledge

Mark Hansen had his doubts about going to college. He was a creative thinker with a flair for finding alternative paths.

“My parents pushed me to go to college,” he says. “I wanted to start a record label.”

So he compromised by studying sound recording and music business at a school in Connecticut.

But Hansen experienced a political awakening that caused him to rethink his future. He wanted to contribute to the public conversation about political and social issues, but in a way that would highlight overlooked perspectives and resonate with ordinary citizens.

“You can’t expect every person to have the time or energy to develop a stance on every problem,” he says. “So I feel that the best way to get people involved is through art, music, and mass culture.”

Convinced he needed a more comprehensive education, he transferred to Rutgers and began a relentless pursuit of knowledge.

At the School of Arts and Sciences, where he is a senior in the Honors Program, he has taken off in multiple directions with his studies, drawing intriguing connections between humanities, social and behavioral sciences, and fine arts.

He’ll graduate with degrees in American studies and visual arts. But he has also focused on cultural anthropology, Middle Eastern studies, and political science.

Hansen describes his eclectic academic record as a response to a complex world facing complicated problems. It’s also a testament to the enduring appeal of the liberal arts and sciences.

“If I felt it was better to have an understanding of many disciplines, rather than sticking with a single field,” Hansen says, “I felt that innovative thinking came from an interdisciplinary approach.”

Indeed, this semester he plans to work with students from the Department of Biomedical Engineering on a mobile game/application aimed at detecting autism and other developmental disabilities in children.

He is planning a career in architecture, but in a capacity that goes beyond designing buildings. He wants to explore how architecture can help strengthen communities and contribute to civic life. Ultimately, he is seeking work that will benefit society.

“I feel lucky that through fate, or through chance, I am here at Rutgers, and I have resources at my disposal,” he says. “I have no excuse not to help those who did not have such luck.”

Larry Paragano has created a scholarship to preserve Italian language and culture in New Jersey

Keeper of Tradition

Larry Paragano was born in 1938 when Nazario “Larry” Paragano’s family moved from a small village in southern Italy to Newark, New Jersey.

Paragano, 7 at the time, remembers having no heat or hot water in the family’s sixth-floor walkup at Bergen Street and 14th Avenue.

Despite the economic challenges, Paragano says those early years in America were rich with family, faith, and friendships.

“I actually think our children are not as fortunate as we were,” he says. “I had uncles, aunts, and cousins all living close by. We saw them at least once a week and most of the time a lot more.”

Paragano, who went on to become a highly successful builder and developer, feels a responsibility to share his life experiences and heritage with younger generations.

His autobiography, Life’s Dreams and Realities, provides an in-depth examination of his family’s roots in Italy and the move to America. He also was one of the founders of the New Jersey Italian and Italian-American Heritage Commission, which is located at Rutgers.

And most recently, Paragano has funded a scholarship for the Department of Italian in the School of Arts and Sciences.

Laura S. White, a professor of Italian, said the scholarship will help preserve Italian language and culture in New Jersey.

“The interest in Italian is growing, and there is a need for good, well-trained teachers at the secondary school level,” White says.

Paragano says that in an increasingly mobile society, children grow up without access to grandparents and others who can pass on traditions.

“There are younger generations that haven’t had the opportunity to learn about their heritage,” he says. “We want to reach them and provide them with that opportunity.”

Paragano was born in Camella, a village in the Salerno province.

“It was beautiful,” he says. “And it had the best mozzarella anywhere in the world.”

After settling in America, his father, Vincent, started a construction business, which Larry would expand into one of the largest in the state.

He has never forgotten his roots. He has been active in many philanthropic activities, including renovating the centuries-old church in Camella.
“It’s very exciting because nobody really has a full grasp of the precise mechanisms by which exercise works to cause a lessening of depression,” Alderman says. “Our approach gives us a better chance of understanding the finer neurophysiological details.”

The three professors were all biology majors in college who saw exercise science as the natural path for their interest in life science. “One of the great things about exercise is you can apply it to anything,” Campbell says. “The whole concept of using exercise to combat disease has always fascinated me.”

Campbell’s current work may shed light on inflammation, which is a common characteristic of some of the most intractable illnesses. She and her students are exploring how fat molecules can compromise the intestinal lining, leading to inflammation. She says exercise science is something more intangible such as nature and cultural traditions.

CHAPS graduates go to work in museums, architectural firms, preservation advocacy groups, and government agencies. They may become planners, land use lawyers, or restoration contractors. “You get a very broad perspective,” says student Adi Sela Wiener, who worked as an architect in Israel before joining CHAPS. “It gives me a new set of tools and system of understanding.”

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CONFRONTING THE PRESERVATION CHALLENGES OF THE 21ST CENTURY

A global gathering reflects the vision of the cultural heritage program at SAS

“It was a scene one could imagine taking place at the United Nations. The stately lecture hall was filled with scholars, activists, and government officials. They came from 30 nations and six continents for a common objective: discuss and develop ways to preserve the cultural and natural sites of the world. But the setting for Cultural Landscapes: Preservation Challenges for the 21st Century wasn’t at UN headquarters in Manhattan.

Our focus on global heritage distinguishes us from many other programs,” says senior Stephen Shikhel, a member of CHAPS. “We have their sights set high, with goals that include medical school, graduate research, and careers in physical therapy and fitness management.

“What I like about this major is that it gives you a whole body perspective,” says senior Stephen Shikhel, a member of Campbell’s research team. “It takes what I’ve learned from the traditional sciences and puts it back in relation to the whole body.”

Senior Ryan Lavell, a member of Alderman’s research team, plans on going to medical school. He hopes one day that exercise science will move to the forefront of modern medicine.

“A lot of doctors today can prescribe exercise but it may be very general,” he says. “But as exercise scientists practicing medicine, we can provide more accurate and more precise programs that might ultimately help to heal people.”

To learn how exercise scientists at Rutgers are teaming up with psychology faculty to treat depression watch the video at sas.rutgers.edu/exercise.

The Najacan Rice Terraces in the Philippines serve as a breathtaking example of a cultural landscape—a seamless blend of nature, culture, and economics.

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The Najacan Rice Terraces in the Philippines serve as a breathtaking example of a cultural landscape—a seamless blend of nature, culture, and economics.

“One of the success stories of this conference was how everyone came away with handfuls of ideas that they can bring back to their communities and apply to their work,” Kane says.

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"I really admire the approach of geographers," she says. "Many scholars examine and understand poverty through a strictly economic lens; a geographer also takes into account, for example, culture, politics, religion, climate, postcolonialism, and gender."

Professor Trevor Birkenholtz, Horton's adviser, agrees. "Geographers are very good at asking 'why' questions," Birkenholtz says. "We want to understand why Bangladesh is the way it is, with respect to its historic colonial relationships, where it sits in global political and economic relationships."

Horton's assignment in the education ministry coupled with her own independent research makes for an extraordinary opportunity to understand Bangladesh. "For many researchers, it's really difficult to interact with the organizations that set the policy," Birkenholtz says. "Alison has made the connections that most academics make only after years and years of work."

"I feel very fortunate to be placed within the ministry at such a fascinating time, and hope that I'll be able to learn from, and contribute to, the new policies." Indeed, her fellowship comes at a time of rapid change for Bangladesh. The country is working toward its Millennium Development Goals, and has made strides in reducing poverty, increasing access to education, and improving the environment, according to the United Nations Development Programme.

Horton says one reason she chose geography is its ability to examine multiple and complex issues in the developing world.

When Alison Horton began contemplating careers, she was drawn to professions that valued social justice. She thought about becoming a social worker or an urban public school teacher. But the field that most appealed to her ideals was geography.

"In college I was flipping through the course book and circling classes I wanted to take," Horton says. "There they all were: world hunger, poverty, migration issues, water resource management, population.

"As it turned out, they were all geography."

Now working on her Ph.D. in the geography department at the School of Arts and Sciences, Horton is not only studying those issues in depth, she's witnessing them firsthand.

The upstate New York native is spending the year in Bangladesh after winning a prestigious new Fulbright award that allows recipients to serve in foreign countries as special assistants in government ministries. The Fulbright Public Policy Fellowship, which is in its inaugural year, aims to help scholars gain public-sector experience in an international setting while carrying out a related research project.

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The geography department at the School of Arts and Sciences is an interdisciplinary and academically rigorous program that encompasses a range of fields, from cartography to environmental protection to international studies.

"Geography develops students' technical skills—map making and spatial data analysis—but also provides them with a well-rounded sense of their place in the world," department chair Richard Schroeder says. "We produce global literacy."
An initiative to transform math education takes shape at Rutgers and local schools

Rutgers Ph.D. student Alison Horton (second from left) is spending the year in Bangladesh with a new Fulbright program. She is pictured here with a group of women who received legal training so they can advocate for marginalized residents.
The annual Aresty Undergraduate Research Symposium seems to get bigger every year. In 2012, the Rutgers Student Center was overflowing with people checking out the many research projects on display. This year, the symposium takes place April 19 at the student center on the College Avenue Campus. Chuck Kerten, faculty director for the Aresty Research Center, and an astrophysics professor in the School of Arts and Sciences, discusses how the center is expanding its mission to help undergraduates get involved in research.

Q: How does Aresty go about getting undergraduates doing research projects?
A: There are different stages in which a student might like to be involved in research. Several programs match students with faculty research projects and provide financial support as early as the summer before sophomore year. Other programs help experienced researchers with funding for expenses.

Q: Can you tell me about your new program for first-year students?
A: The Aresty-Byrne Program is introducing students to inquiry-based learning in a seminar setting and then having them test their findings in a research environment. The goal is get students involved in research in their second semester at the university.

Q: What was the response when the seminars debuted this semester?
A: They filled up quickly. The student interest was exciting. He plans to offer more next year.

Q: Aresty supports research in all areas. To what extent are non-science disciplines taking advantage of the Aresty program?
A: At this point in the Research Assistant program, about half of the projects are not in the hard sciences. They’re in the social sciences or humanities. We’ve seen some fantastic projects. And we’re happy to talk with faculty about how to sculpt a project that would be appropriate for an undergraduate.

When we give presentations and explain to faculty and students what we do, they say, “Yes, I want to do that.” We are in a fortunate position to be able to support more projects next year if we get more faculty involved.

Q: The symposium drew nearly 400 presenters last year. How was the audience turnout?
A: It was equally impressive. What feels really good is faculty will spend hours there. The university president has always attended and so has the vice president for undergraduate education. The students see that what they do matters and that it’s recognized at the highest levels of the university.

The Aresty-Byrne Center is named for the late Jerom Aresty, a Rutgers alum, and his wife, Gwendolyn Aresty, who provided funding to establish the program. Jerom Aresty graduated from Rutgers (B.A. 1941) and earned a master’s degree in electrical engineering. He worked at Bell Labs, where he was lauded for his work in the development of the transistor and integrated circuits. He established the Aresty-Byrne Program to support research and to introduce students to scientific research at an early stage in their undergraduate careers.

Learn more about the program at aresty.rutgers.edu.