Welcome to the 2016 edition of Orthopedics and Rehabilitation in Review. In this issue, we highlight a number of promising research initiatives and introduce you to our new faculty. We are also pleased to announce the opening of two new facilities.

UW Health at the American Center, the culmination of many years of careful planning, brings together orthopedic surgical and clinical care with an unprecedented array of services. UW Health at The American Center allows us to provide remarkable care for our patients, a learning environment for our students and research opportunities for our faculty and staff.

UW Health Rehabilitation Hospital is only the second facility of its kind in Wisconsin. The hospital is designed to help patients in need of intensive inpatient rehabilitation reach their highest level of recovery.

We are fortunate to have an outstanding group of physicians and scientists working in the Department of Orthopedics and Rehabilitation. We invite you to visit uwhealth.org/ortho and ortho.wisc.edu to learn more about our faculty, clinical programs and latest research.

Thomas Zdeblick, MD
A.A. McBeath Professor and Chairman
Department of Orthopedics and Rehabilitation

Neuromuscular Biomechanics Lab:
Groundbreaking Research for Athletes

Three-dimensional computerized analysis provides assessment of running mechanics, including precise joint motions and ground contact forces.

As the appeal of running has grown, so has the incidence of running-related injuries. Through the years, physicians, coaches, athletic trainers, physical therapists and orthopedic researchers have focused on ways to increase running efficiency and decrease running injuries.

At the University of Wisconsin School of Medicine and Public Health, physicians and scientists working in conjunction with the University of Wisconsin Athletic Department have developed a special expertise in preventing and treating running injuries.

Professor Bryan Heiderscheit, PhD, director of the Neuromuscular Biomechanics Lab in the UW Department of Orthopedics and Rehabilitation, practices physical therapy at the UW Health Sports Rehabilitation Clinic and is director of the UW Health Runners Clinic.

The runners clinic is designed to speed recovery from existing injuries and reduce the risk of future injuries.

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Welcome to Our New Orthopedic and Rehabilitation Providers

SCOT BROWN, MD
Joint Replacement and Orthopedic Oncology

Clinical Interests
- Direct anterior total hip replacement
- Total knee replacement
- Revision hip and knee replacements
- Bone and soft tissue sarcoma (pediatric and adult)
- Metastatic cancer in the pelvis and extremities

DREW WATSON, MD
Sports Medicine

Clinical Interests
- Pediatric sports medicine
- Prevention and management of sports-related injuries

Research Interests
- Pediatric exercise physiology
- Cardiovascular adaptations to exercise
- Predictors of injury in competitive athletes

PAUL WHITING, MD
Orthopedic Trauma

Clinical Interests
- Pelvic and acetabular trauma
- Complex articular fractures
- Treatment of patients with multiple injuries
- Post-traumatic reconstruction

New UW Health Rehabilitation Hospital Opens

Patients who need intensive rehabilitation services have a new and innovative destination for care. UW Health Rehabilitation Hospital is only the second facility of its kind in Wisconsin.

The freestanding, 50-bed inpatient facility—located on 10 acres adjacent to UW Health at The American Center on Madison’s east side—offers specialized programs for people who have had a stroke, brain and spinal cord injuries, amputations, complex orthopedic injuries and other conditions that require inpatient rehabilitation services. The hospital is designed to promote recovery outside of the traditional hospital setting by offering patients an immersive rehabilitation experience that helps support their independence and reintegration into their homes and communities.

UW Health Rehabilitation Hospital is staffed with an interdisciplinary team of specially trained physicians, nurses and therapists. The team works with patients (and their families) to help them regain their ability to perform daily tasks, cognitive processes, and physical function.

Among the unique features and services at the facility are: a functional-living apartment where patients and their families can practice independent living before going home; an adaptive kitchen for re-learning daily living skills; a car module to train patients and family members in safe car-transfer techniques; two large therapy gymsnasiums equipped with the latest equipment and therapy devices; and dialysis provided by Wisconsin Dialysis.

The facility also offers two floors of large private patient rooms, a secure brain-injury unit with monitored rooms, patient lifts and dining areas, and a dedicated stroke unit with specialized equipment. Outdoors, the facility features a healing garden, mobility courtyard, and basketball court and golf area designed for more athlete-focused recovery.

UW Health Rehabilitation Hospital is a partnership of UW Health, UnityPoint Health- Meriter and Kindred Healthcare.

UW Health Rehabilitation Hospital team creates individual care plans to meet each patient’s needs and goals.

UW Health Rehabilitation Hospital is located at 5115 North Biltmore Lane, just south of UW Health at The American Center.

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After football, Mike remained active well into his life.

Mike, a senior vice president at the Robert W. Holman Orthopedic Development Board. As a result of his philanthropic support, the UW Orthopedic Development Board is able to advance the research and academic mission of the Department through philanthropy and community outreach.

Mike Witt is a member of the UW Orthopedic Development Board. As a result of his own patient experience and subsequent understanding of the promise of future of orthopedic treatment, he is working to advance the research and academic mission of the Department through philanthropy and community outreach.

Mike is a senior vice president at the Robert W. Baird office in Madison, a 1990 graduate of UW-Madison. While at UW, he earned a degree in psychology and was a linebacker for the 1986–1988 Badgers football teams. After football, Mike remained active well into his 40s, competing in triathlons and marathons, playing tennis, and swimming, until increasing hip pain put a stop to all exercising. He recalls with a wince, “The pain was terrible. It affected my ability to walk, my entire lifestyle.”

With a diagnosis of arthritis with bone spurs, Mike sought out Richard Illgen, MD, UW Health orthopedic surgeon who pioneered robotic-assisted hip replacements.

Mike’s hip surgery was early on a Monday morning. By the afternoon, he “felt great” and was ready to go home, but Dr. Illgen sent him to the UW Carbone Cancer Center where his hip was irradiated to destroy any residual stem cells that could potentially develop into more bone spurs.

“After the surgery, I couldn’t play tennis with my son. Now I play three to four times a week, I couldn’t walk 18 holes on the golf course because of the pain. Now I have no pain at all.

“I’ve told this story to hundreds of people since then because it was such an amazing experience. And the more I told the story, the more I began to realize how much is happening in orthopedic medicine.” Mike

Mike later attended a stem cell and regenerative medicine presentation by William Murphy, MS, PhD, UW Health orthopedic researcher, and Thomas Zdeblick, MD, chairman of the Department of Orthotics and Rehabilitation.

“What happened that night was what Mike calls an “aha moment” — one that led to further conversations with Murphy and his colleague, Wain-Ju Li, PhD, who studies the use of pluripotent stem cells to produce a patient’s own replacement tendons and ligaments. “The more I learned, the more I began to realize how much is happening in arthritis and regenerative medicine at UW,” says Mike.

If you spend five minutes in Mike’s office, you know he’s an avid Badger fan. If you spend a little more time with Mike, you learn that he is committed to his family, his profession, staying active and, recently, advancing the research efforts of the UW Health orthopedic physicians and UW researchers who changed his life.

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“In the future, we want to move forward, to perfect these treatments, we need people to support this amazing research. Whether we give of our time, our money, by involving others or by considering The Freedom of Movement Fund or donating online, we can change the lives of so many people and their families.”

Edward and Jean Achscher Jennifer Auerbach John and Kathleen Bach Harold and Jenny Bitter Michael and Kathy Blumenthal Eric Brody and Freddie Adelson Richard and Peggy Dugue Genna Dewoskin James and Jessica Doyle Gary Eisenberg Rachel Egan Cindy Faerer Marty and Amy Fields Andrew Frank Albert Friedman and Susan Yudisky Gail Gabbons Alan and Debra Green Eric Singling and Margaret Trenness Angela Heine Gregory and Susan Hill Jay and Jeanne Hinds Christopher Hines Michael and Laura Hock Michael and Sally Honeck Stephen and Linda Kalin Taddy Kalik Emily Kaliski Richard and Laura Kaliski Sandra Kel Logan Kelkenny Sally Kelling Dana Kehr Stanely and Sharon Koenig Amanda Keperg Robert Krueger Brian and Susan Lochon Lisa Lonero Lina Martin Amy Mietzel Arthur Polsky and Myra Schultz Allison Pragopati Michael Pressman and Marsha Cohen Mary Ramberg Gary and Judy Ries Jesse and Stephanie Rintala Peter and Carrie Rizzi Rich and Catherine Rotter Mark and Peggy Scallon Laura Schmidt Christine Schultz Paul and Sherle Sandel Ralph and Deborah Stanner Leon and Barbara Swinnerton Kimberly Terrier John and Mary Thilly Peter Thilly Pardy Thompson Grant Till Joe and Cindy Wolz Von and Elizabeth Whiteo James and Nancy Youngmann Keith and Margaret Zutter
Developing Exercise Prescriptions to Prevent Osteoporosis

As the American population ages, the number of osteoporosis-related bone fractures has increased. This reality has sharpened interest in understanding the relationship between exercise and osteoporosis prevention. Early studies into the effect of high impact exercise on building bone strength inspired women to add activities such as running, aerobics, dance and tennis to their exercise regimens. More recent research suggests that exercising early in life produces greater gains in bone strength. Peak bone mass in women occurs between the ages of 16 and 20. Bone mass gradually declines when women reach their mid-30s and declines more rapidly after menopause.

Beginning in 1998, Dr. Scerpella’s team enrolled 250 seven- to 10-year-old girls in a study that followed their bone growth for up to 17 years. The researchers gathered data about the girls’ participation in physical activity, diet, height, weight and lapses in activity. Their analyses show that exercise during childhood and adolescence enhances bone formation that will improve adult skeletal strength. The optimal type, timing and amount of exercise for maximal benefit are yet to be determined.

The next step is to determine if specific magnitudes or types of movement affect developing bone differently. The team will compare typical up-and-down, side-to-side and forward-backward movements to see how these forces relate to bone remodeling. The objective is to identify which movement patterns stimulate the greatest improvements in bone strength at different body sites.

When these questions are answered, physicians will be able to recommend “exercise prescriptions” to optimize bone acquisition during childhood and adolescent growth, enhancing lifelong skeletal strength and decreasing fracture risks.

UW Health at The American Center

UW Health at The American Center— a unique health and wellness facility located on Madison’s east side—opened last August. The five-story, 503,000 square foot building provides inpatient and outpatient care, along with wellness programs and a sports performance center. Orthopedic and rehabilitation programs are among The American Center’s key services. The facility was designed to meet health and wellness needs in a patient- and family-centered environment.

UW Health at The American Center includes:

- A 56-bed inpatient hospital for orthopedic and general medical/surgical patients
- Outpatient diagnostic and treatment procedures, including traditional and MRI
- Two floors of clinic exam rooms for outpatient care in a variety of clinical specialties
- Outpatient diagnostic and treatment procedures, including traditional and MRI
- Physical and occupational therapy
- A wellness and sports performance wing
- Two floors of clinic exam rooms for outpatient care in a variety of clinical specialties
- A 24-hour emergency department

Contact Information

UW Health physicians practicing at The American Center are the same as for referring to University Hospital.

Patient transfer or urgent consultation request:
- Contact the Access Center at (930) 472-0111 or (603) 263-6796
- For consultation requests, contact Ortho Access at (888) 978-4811 or orthoaccess@uwhealth.org.
- You can also visit uwhealth.org/referral or follow the same process you would for referring to University Hospital.

Outpatient referral to a UW Health Orthopedic Specialist

For consultation requests, contact Ortho Access at (888) 978-4811 or orthoaccess@uwhealth.org.

For more information about UW Health at the American Center, visit uwhealth.org/americancenter.
**Neuromuscular Biomechanics Lab** (continued from page 1)

“How people run plays a large role in injuries,” Dr. Heiderscheit says. “Common running problems like shin splints, stress fractures and knee and back pain are often traced to flawed running form or poor training habits. We can show the athletes which running styles can reduce their risk of injury.”

Heiderscheit says there are simple ways to help people—especially novice runners and those who haven’t run for many years—to run better and remain healthy.

One strategy he has been studying is having runners use a shorter stride. By reducing their stride length by 5 to 10 percent, they change their body posture when landing.

“Using a shorter stride, but maintaining the same speed, a runner’s foot is on the ground for less time, so the body becomes ‘more springy.’ As a result, there is less loading on the joints, which lessens the risk of many common running injuries.”

In another study, Dr. Heiderscheit is collaborating with experts from UW Health Sports Medicine and the UW School of Engineering to develop ways to reduce hamstring injuries in elite, professional and recreational athletes. Such injuries can take athletes out of competition for all or part of a season.

The researchers developed a three-phase rehabilitation protocol with specific recovery milestones that guide and track the recuperation process. So far, using the protocol, fewer than 10 percent of the athletes sustained a re-injury, a substantial improvement over the typical re-injury rate of 30 percent.

The success of Dr. Heiderscheit’s studies rests, in part, on the partnership between the Department of Orthopedics and Rehabilitation and the UW Athletic Department through the Badger Athletic Performance program.

“With the insights we gather from our work with the Badgers’ sports programs, we can assist the coaches and athletic trainers in developing individualized training and recovery programs for student-athletes, to help them improve, stay healthy and avoid injury.”

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**FOR MORE INFORMATION:**
Visit uwnmbl.engr.wisc.edu and ortho.wisc.edu/BAP