STEADMAN PHILIPPON RESEARCH INSTITUTE

SPRI News

Spring 2014

THE STEADMAN CLINIC AND STEADMAN PHILIPPON RESEARCH INSTITUTE

U.S. OLYMPIC NATIONAL MEDICAL CENTER

INSTITUTE INSIGHT

Steadman Philippon Research Institute and The Steadman Clinic

Designated a National Medical Center Within the U.S. Olympic Committee's National Medical Network

The Steadman Philippon Research Institute and The Steadman Clinic announced its official designation as a National Medical Center within the United States Olympic Committee's National Medical Network, one of only two such centers since the network was first announced in August 2013.

"The Institute has one of the largest orthopaedic patient databases in existence, and its research is published worldwide in peer reviewed professional journals. The patient treatment protocols developed and used by the physicians at The Steadman Clinic are validated through this research. The quality of SPRI's research and The Clinic's patients' outcomes have led to several of the physicians becoming thought leaders in the field of sports medicine orthopaedics," said Karen Briggs, SPRI director for Outcomes-Based Orthopaedic Research.

"Our goal is to contribute to Team USA by delivering the highest standard of evidenced-based orthopaedic care and personal attention to Team USA athletes," said Dr. Marc J. Philippon, co-chairman of the Steadman Philippon Research Institute and managing partner of The Steadman Clinic.

The Institute's commitment to research and The Clinic's philosophy of providing evidence-base care to elite athletes, as well as people who just want to live an active lifestyle, have produced countless success stories both on and off the awards podium.

"We are pleased to have the chance to give back to the athletes who have worked so hard to become Olympians and Paralympians, and we look forward to working with Team USA for many years to come," said

(continued on page 2)

INSIDE

(continued from page 1)

Dr. Richard Steadman, who founded the nonprofit entity now known as the Steadman Philippon Research Institute.

Through its fellowship program, the Institute has graduated 196 orthopaedic surgeons now practicing in multiple locations in the United States and abroad.

"The Steadman Philippon Research Institute and The Steadman Clinic are highly honored to be designated a USOC National Medical Center, serving the athletes of the western United States," said Dr. Philippon.

"We are pleased to have the Steadman Philippon Research Institute and The Steadman Clinic join the USOC's National Medical Network as a national partner," said Alan Ashley, USOC chief of sport performance. "The variety and value of services that this collaborative project will provide is a great resource for Team USA, and we are excited to see the expansion of the National Medical Network, which now includes two national and five regional medical centers."

ABOUT THE USOC

Founded in 1894 and headquartered in Colorado Springs, Colo., the U.S. Olympic Committee serves as both the National Olympic Committee and National Paralympic Committee for the United States. As such, the USOC is responsible for the training, entering and funding of U.S. teams for the Olympic, Paralympic, Youth Olympic, Pan American and Parapan American Games, while serving as a steward of the Olympic and

Update: The IRA Charitable Rollover Provision and Keeping More of Your Cash

By Lynn Thomas

We are four months into 2014 and people want an update on whether Congress will again allow qualified, charitable distributions from their traditional IRA plans. The original IRA charitable rollover legislation that emerged from the Pension Protection Act of 2006 allowed up to $100,000 in distributions from an IRA to be made directly from the plan to a qualified charity by donors that were 70 ½ or older at the time of the transfer. This was a beneficial way to transfer assets in an IRA for giving to charities and allowed the transfer to be applied to a plan-holder's minimum distribution requirement.

The provision has not yet been renewed for 2014, although it is hoped that, given the history of Congress to renew this legislation, it will be retroactively reinstated for 2014.

The history of this legislation has been unpredictable and has left charities and donors in limbo. Originally a temporary charitable giving measure that expired December 31, 2007, Congress has renewed the measure, but only by renewing it retroactively after its expiration rather than making it permanent. The last expiration was December 31, 2011, and while the American Taxpayer Relief Act of 2012 extended the rollover provision retroactively to January 1, 2012, through December 31, 2013, the Act wasn't signed into law until January 2, 2013.

While we wait for news on the future of the IRA provision, we can look to the stock market

Paralympic Movements throughout the country. For more information, visit TeamUSA.org.

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2013 a Record Year for Steadman Philippon Research Institute Production

How your contributions enable SPRI to maintain its position as one of the world leaders in orthopaedic sports medicine research

The Steadman Philippon Research Institute has nine physicians, 20 research scientists, and five administrative professionals. Yet, this relatively small group continues to position SPRI as one of the most productive institutions in the world as measured by publications, presentations, and awards.

(continued on page 4)

as an advantageous way to give. It has been a good year for the stock market and by giving long-term appreciated stock you can receive four great benefits:

- Giving stock allows you to keep your cash.
- Capital gains tax is avoided.
- You can claim a charitable income tax deduction.
- You ensure the research, education, and treatment programs of Steadman Philippon Research Institute will continue to change lives.

We appreciate the difference your support helps us make. Please contact John McMurtry at mcmurtry@sprivail.org or (970) 479-5781 if you have any questions.

Dr. Marc Philippon Educates Top Surgeons from Around the World

Annual Vail hip symposium focused on hip preservation

Photo: Barry Eckhaus

Marc J. Philippon, M.D.

Once per year, the Vail Valley becomes the center of the universe for hip surgeons.

Now in its ninth year, the annual Vail Hip Arthroscopy Symposium attracted roughly 200 surgeons and medical professionals from around the globe to the Vail Valley.

Hosted by Dr. Marc Philippon, the symposium's lectures took place March 27-29 in Vail.

Orthopaedic surgeons and faculty from four continents gathered to hear presentations from 21 of the world leaders in hip arthroscopy and to learn the latest techniques associated with arthroscopic hip surgery.

The purpose of the symposium was to provide a forum where top leaders in the field can exchange thoughts. Young doctors who want to learn can see and hear that exchange and take it back home to provide a better experience for their patients.

Course work included hands-on cadaveric training, preceded by case discussions about the hottest topics in hip arthroscopy, including controversies and difficult cases.

Practical lab training sessions suited to experienced surgeons looking to enhance their knowledge of reconstructive hip arthroscopy and preservation techniques were offered. Surgical solutions were demonstrated in the cadaveric labs of the Steadman Philippon Research Institute.

The symposium is a result of a partnership between The Steadman Clinic and Smith & Nephew, a global medical technology company dedicated to helping improve people's lives through advanced products developed for orthopaedic surgery, wound management, and sports medicine.

(continued on page 17)

(continued from page 3)

In 2013, SPRI's doctors and researchers had 58 articles published in scientific and medical journals such as The *American Journal of Sports Medicine*, the *Journal of Orthopaedic Research*, and the *Journal of Bone and Joint Surgery*. Each publication was cited in the National Library of Medicine (PubMed).

More than 40 presentations describing the outcomes of studies conducted at SPRI were made at conferences in the U.S., Europe, Canada, South America, and Africa.

Physicians and scientists at Steadman Philippon were honored by the American Academy of Orthopaedic Surgeons, the International Society for Hip Arthroscopy, and the International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine.

HOW DO THEY DO IT?

The answer begins with you.

"All of our achievements are made possible through the support of generous individual donors and our corporate and institutional friends," says John McMurtry, M.A., M.B.A., director of Development. "We appreciate that support, which has helped SPRI's vision become a reality."

INTANGIBLES

Dr. William Rodkey, D.V.M., director of SPRI's Center for Translational and Regenerative Medicine Research, adds that two intangible factors have allowed things to come together that provide the impetus for so much productivity in 2013.

"The first is Dr. Steadman's overall leadership. He has always seen this Institute as an important means to validate and self-enforce a grade card as to how we are doing. The way he communicates and thinks with people serves as a stimulus for the physicians and scientists. It really gives us some guidance and food for thought in our everyday approach to these research problems. That kind of thinking yields studies, publications, and presentations."

"The second intangible," says Dr. Rodkey, "is that the attending surgeons at SPRI are truly interested in and dedicated to research. They share Dr. Steadman's philosophy and as a result, they really want to know how they are doing and what's coming next. They are willing to support the research financially, philosophically, and intellectually."

A third underlying factor contributing to productivity is not intangible, according to Dr. Rodkey. "It's technology," he says, emphatically. "Clearly, the technological advances we've made at Steadman Philippon represent a gigantic step toward efficiency, reliability, and accuracy."

Coen Wijdicks, Ph.D., senior staff scientist and director of BioMedical Engineering, and Karen Briggs, M.B.A, M.P.H., director of the Center for Outcomes-Based Orthopaedic Research (COOR), provide a closer look at how SPRI's advanced technology translates into high-impact productivity.

FOCUS

"We have clearly defined goals and outcomes," explains Dr. Wijdicks. "Once you know where you are going, you can have the greatest impact. We know how to optimize our processes. Our focus is sports medicine and we concentrate on our strengths. That makes the Steadman Philippon Research Institute one of the best in the world at what it does."

Dr. Wijdicks adds that now that SPRI's expertise has been established, corporations, institutions, and the medical/scientific communities look to SPRI to develop and validate new products, techniques, and procedures.

EFFICIENCY

"One of the reasons we are more efficient than ever is because of our data software system," says Ms. Briggs. "Our software incorporates a system that allows the data to check itself. Ninety percent of patient-based verifications (related to procedures that have been performed) are done by email. Instead of sending 900+ messages a month by regular mail and hoping for a response, patients now receive email questionnaires. They are very responsive and the new system has made our communication with patients much easier."

Ms. Briggs also credits the staff's experience as a factor in improving efficiency. "Knowing and working with this database for 21 years allows us to be thorough and faster," she explains. "When doctors and fellows come to us with a question, we can do a better job of answering that question, responding more quickly, and helping them get their findings published sooner."

Individuals and institutions can often see the results of their contributions in a matter of months, not years. The average time required for a research initiative at Steadman Philippon is six to eight months. When a project takes longer, those who make the effort possible are given periodic updates by the principal researchers.

IMPACT

Focus and efficiency are impressive, but the impact of SPRI research is even more important.

"We are not trying to break records or beat the number of the previous year's publications or presentations," says Dr. Wijdicks. "Our goal is to maintain the quality of production regardless of external factors that are out of our control."

"Our production is having an impact on the scientific and medical communities," he continues. *"The American Journal of Sports Medicine (AJSM)*, for example, is the number one orthopaedic journal (out of 65) in terms of 'impact factor.' This metric, according to the editors, shows that authors around the world pay attention. If a person looked at any 2013 edition of the AJSM, the Steadman Philippon Research Institute name was probably in it."

Dr. Philippon's landmark article on labrum reconstruction of the hip was

(continued on page 6)

(continued from page 5)

the lead article in the August 2013 issue of the AJSM. In the December issue of the same publication, four of the articles were written by SPRI's staff members.

"Peer-reviewed publications that incorporate relevant research provide a significant, credible resource among peers," says Dr. Wijdicks. "Because it is published in such a large forum, the result is high impact and captures a large audience."

ACCOUNTABILITY

Whether a person contributes $100, $1,000, or $100,000, that money is carefully managed so that 77 percent goes directly to research programs, while only 23 percent is spent on overhead. The percentage of contributions dedicated solely to research is one of the highest, if not the highest, in the world.

Some of the money is spent on items, supplies, and equipment that might be scientific-but-less-than-glamorous.

Photo: John Kelly

"We would not be able to collect data as we do if we did not keep our software updated and moving forward as medicine advances," says Ms. Briggs. "We have to know what is in the professional literature, and it costs money to have access to that literature. We've hired some of the best minds in the country to manage high-level statistical programs. Then we have to buy programs that will help our doctors make their presentations and present our research at meetings around the world."

"We know the benefit of every surgical screw that gets donated," adds Dr. Wijdicks, "and we appreciate the gift and the giver that make it possible. We want donors to know that their donations go to something necessary and good."

CARE

Contributions also result in life-changing, patient-centered care. People are able to go about their normal daily activities, postpone or avoid joint replacement, participate in sports at every level, prevent injuries, and remain physically active throughout their lives because of procedures developed or refined at SPRI.

Here are three examples:

"The research for Dr. Philippon's labral reconstruction procedure began in 2005 when he came to SPRI," says Ms. Briggs. "We've been keeping track of patients for seven years and have now validated that the procedure will last for an extended period of time. His research has directly affected patient care by changing the method of treating hip conditions and injuries."

Dr. Steadman developed an arthroscopic procedure for injured knees called "The Package." Patients who underwent the procedure were understandably worried about if and when they might have to return for another

procedure—or possibly even need knee replacement.

Dr. Steadman's team conducted long-term monitoring of the repaired knees' "survivorship." They found that many patients were able to delay total knee replacement for up to 10 years, allowing them to make informed choices about their future health care.

For his landmark study, Dr. Steadman was honored with the Richard O'Connor Research Award given by the Arthroscopy Association of North America. The study was published in the February 2013 issue of *Arthroscopy*.

Robert F. LaPrade M.D., Ph.D., received the 2013 Orthopaedic Research and Education Foundation (OREF) Clinical Research Award for his paper on "Improving Outcomes for Posterolateral Knee Injuries." The award is unofficially recognized as the "Orthopaedic Nobel Prize" in the medical and scientific communities. Dr. LaPrade presented his paper at the combined annual meetings of the Orthopaedic Research Society and the American Academy of Orthopaedic Surgeons.

ONGOING INITIATIVES

"Your contributions are already at work and supporting new research initiatives," concludes Dr. Wijdicks. "Investigations involving the hips, shoulders, knees, feet, and ankles are growing exponentially. The metrics used to define successful outcomes are becoming more demanding and more precisely defined."

"In the coming years, the Steadman Philippon Research Institute will continue to solidify its role as a leader in sports medicine research. That research will impact the lives of those who contribute to SPRI, as well as those of patients throughout the U.S. and abroad."

Why was 2013 an especially productive year for SPRI? Because your support made it possible.

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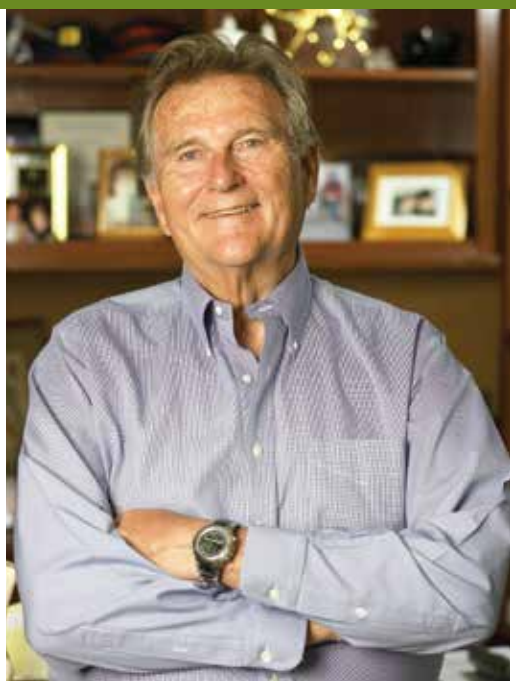

Photo: John Kelly

Dr. Richard Steadman to Retire from His Surgical Practice at The Steadman Clinic

Sports Medicine Pioneer Will Continue as Co-Chairman of the Steadman Philippon Research Institute

VAIL, Colo. – Jan. 29, 2014 – Dr. J. Richard Steadman, founder of The Steadman Clinic and the Steadman Philippon Research Institute (SPRI), has announced that he is retiring from his active surgical practice.

Dr. Steadman looks forward to continuing to consult with his physician colleagues at The Steadman Clinic, focusing on the practice of evidence-based medicine to return patients to their active lifestyles. He will also continue as co-chairman of the Institute, the charitable entity known throughout the world for its research into the causes, prevention, and treatment of orthopaedic disorders.

"I cannot imagine a more fulfilling career than the one I have had as an

(continued on page 8)

"A generation of professional athletes and grateful patients owe their livelihood and mobility to his successful, pioneering and exceptional… care."

– MIKE SHANNON, CHAIRMAN, VAIL HEALTH SERVICES

(continued from page 7)

orthopaedic physician," said Steadman. "I'm lucky to have had so many patients determined to win again in their sports after serious knee injuries. Their will to succeed has played a large part in my success in treating them. Now I look forward to taking part in further research projects with SPRI scientists."

"Dr. Steadman is a great friend and an inspiration for all orthopaedic surgeons," said Dr. Marc J. Philippon, managing partner of The Steadman Clinic. "He has been an outstanding pioneer in the world of sports medicine for years. His innovations have influenced the field and benefited countless patients. He had exceptional surgical skills, but he is much more than a surgeon. He is an amazingly caring physician. He is retiring from his surgical practice, but his innovative contributions will continue forever."

An award-winning innovator and mentor in the field of orthopaedic sports medicine, Steadman founded the non-profit Steadman Sports Medicine Research Foundation in 1988 at South Lake Tahoe, California, where he began his orthopaedic practice in 1970. Its purpose was to collect and analyze patient data and outcomes over time. That organization exists today as Steadman Philippon Research Institute, which is known worldwide for its unprecedented clinical database and research into orthopaedic injuries of the knee, hip, shoulder, ankle, and spine.

Phil Mahre (L) with Dr. Steadman and Bill Marolt (R), U.S. Ski Team alpine director, following his Olympic silver medal performance in Slalom, Lake Placid (1980).

Early in his career at South Lake Tahoe, Dr. Steadman developed significant improvements in the field of post-surgical rehabilitation. These techniques are important in shortening and strengthening the healing process after surgery. Steadman is internationally known for the development of many advanced surgical procedures for the knee, including "microfracture," a procedure that repairs the damaged joint and encourages the re-growth of articular cartilage. He also developed the "healing response" and most recently (in 2011) "The Package," a technique that can restore normal, comfortable movement to the stiff and painful arthritic knee, thereby avoiding joint replacement surgery.

AN AMAZING JOURNEY

Born in Sherman, Texas, Steadman graduated from Texas A&M University, where as a freshman and sophomore he was on the football team headed by legendary coach Paul "Bear" Bryant.

After earning his medical degree in 1963 from the University of Texas Southwestern Medical School in Dallas, Steadman served his internship at Charity Hospital of New Orleans. Steadman was drafted into the U.S. Army and spent 1964-66 in Germany, returning to Charity Hospital, where he completed his four-year residency. He began his career as an orthopaedic surgeon in South Lake Tahoe, Calif., in 1970. During the first 20 years of Dr. Steadman's practice, he established his reputation for excellence through his successful treatment of athletes from the U.S. Ski Team and other professional sports.

In 1990, two years after forming the research foundation, he and his family—and many members of his staff—made the decision to move to Vail, where

he was joined by shoulder expert, Dr. Richard Hawkins. Together, the two physicians formed the renowned Steadman Hawkins Clinic.

In 2004, Hawkins moved to South Carolina, where he continues his orthopaedic practice. In March 2005, Dr. Marc J. Philippon joined the Vail practice, which was later renamed The Steadman Clinic. The Clinic will continue to operate under that name. With Philippon and other clinic physicians' involvement in research, the Institute continues to thrive, earning international recognition.

Under the leadership of Steadman and Philippon, the clinic that began with a focus limited to treatment of knee and shoulder problems now includes 11 physicians with multiple orthopaedic sub-specialties. The Steadman Clinic is regarded as one of the world's preeminent orthopaedic sports medicine clinics.

THE STEADMAN LEGACY

"Dr. Steadman stepped into the operating room to perform his first operation at Vail Valley Medical Center in the summer of 1990," said Doris Kirchner, president and CEO of Vail Valley Medical Center. "That day marked the beginning of 24 years of consistent and continuous success for The Steadman Clinic and for VVMC. The face of VVMC changed forever."

"Richard played a tremendous role in creating an internationally recognized destination orthopaedic center of excellence for the Vail Valley," said Mike Shannon, chairman, Vail Health Services. "A generation of professional athletes and grateful patients owe their livelihood and mobility to his successful, pioneering, and exceptional delivery of innovative orthopaedic health care."

Steadman has treated well over 12,000 patients since relocating to Vail, including many elite athletes across various sports, and was sought out by some of the world's best-known athletes and public figures for treatment. His ability to return high-level athletes with knee injuries to medal-winning victories following surgery and rehabilitation has made him an iconic figure in sports medicine.

Photo: John Kelly

Cindy Nelson, who won a bronze medal in the women's downhill at the 1976 Olympic Winter Games, the first of her three Olympics, was the first elite athlete that Steadman treated. "Dr. Steadman is the single greatest influence on my life and I share each of my successes with him," said Nelson. "Not only did he influence my competitive skiing career, helping me come back better and stronger after each of my injuries, he also helped me as a person. He inspired me with his humble character, his integrity, his incredibly innovative mind and his insatiable desire to help. My story is the same of many patients, athletes, doctors and skiing champions worldwide."

During his career, Steadman has been a consultant to the NFL's Denver Broncos and MLB's Colorado Rockies. He served as U.S. Alpine chief physician at nine consecutive Winter Olympic Games from 1976-2006.

"I recognize that our Clinic has gained considerable attention for our work with elite athletes over the years," Steadman added. "But we also made it our mission to help everyday people stay active longer. Helping people return to their normal lives and healthy physical activity has been just as rewarding as getting an Olympic skier back on the slopes or an NFL player back on the field."

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RESEARCH UPDATE

Developing Programs to Prevent Hip Injuries in Young Athletes

By Dawn Ommen, M.D.

Editor's note: Dr. Ommen is currently completing a research internship in the Center for Outcomes-Based Orthopaedic Research department of the Steadman Philippon Research Institute

Dr. Philippon and his staff just completed the fourth consecutive year of physical hip screening for pre-adolescent/adolescent athletes. The purpose of the screening is to look for any indication of femoroacetabular impingement (FAI), an abnormal bone growth in the hip joint that can lead to hip pain and labral tears.

FAI is a common diagnosis in Dr. Philippon's patient population and is seen at a higher rate in the athletic community as compared with the general public. Indications of FAI are being found in young athletes, sometimes even before the onset of symptoms. The goal of the screening is to identify factors related to developing FAI and, ultimately, to develop an exercise prevention program that would allow these athletes to continue with their sports and be active throughout their lifetimes.

Photo: John Kelly

The number of athletes participating in the study has increased every year. This year we were able to more than double our prior participant numbers, as 77 athletes completed the study. This included 28 hockey players, 42 skiers, and seven figure skaters between the ages of nine and 17.

Figure skaters were a new addition to the study this year. The study consists of two parts: an abbreviated hip MRI and a clinical hip exam. The clinical exam is similar to the exam that professional and Olympic athletes experience as one of Dr. Philippon's patients. The exam consists of range of motion, strength testing, and specific hip motion tests. These clinical results are correlated with a musculoskeletal radiologist's reading of the patient's MRI.

Erin, a mother of one of the study participants, knew right away that she wanted her child to participate in the study. "Being involved in healthcare myself and also being a lifelong athlete I realize the importance of these types of studies. In addition, my child may benefit from the knowledge gained through this study in the future."

Erin indicated that the experience that her child had during the study was a great learning opportunity into the world of medicine, experienced in a non-threatening atmosphere.

The data from the last three years of screening have resulted in two manuscripts that have been published in the *American Journal of Sports Medicine*, the premiere sports medicine journal in the world. One of the manuscripts reported that even at young ages, ice hockey players have a greater bone growth associated with FAI than skiers of similar ages.

The other publication identified and analyzed at-risk positions for the hip during specific hockey movements. With a significant increase in female athlete participation in this year's screening, we are looking to analyze the differences seen in male and female athletes for the first time this year. In addition, in the

fourth year of the study, we are gaining valuable longitudinal data as many of the study's participants have completed the study each of the past four years.

This study has been accepted to be presented as a poster at the International Olympic Committee Injury Prevention meeting in April. SPRI and Dr. Philippon would like to expand this screening in cooperation with the United States Olympic Committee medical team and United States Ski and Snowboard Association Sports Medicine.

This unique study is providing groundbreaking information in the young athlete population. Through this study, Dr. Philippon and his team are leading the way in identifying causes of an often debilitating hip condition in the competitive athlete, providing these and future competitors a better chance at an injury-free career and continued active lifestyle.

This study was partially funded by Mr. and Mrs. Paul Schmidt.

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EDUCATION

Dr. Ulrich Spiegl: Destined for a Career in Sports Medicine from the Start

By Jim Brown

The series of events that resulted in Ulrich Spiegl becoming a European Visiting Scholar at SPRI began two generations before he was born.

"My father and my grandfather were physicians," says Dr. Spiegl. "I probably began thinking about being a doctor when I was nine or 10, so that was pretty much my goal all of the time. It always seemed to be part of the conversation in our family."

There were many other factors that eventually led him to Vail and SPRI, where he began his one-year

Photo: Angelica Wedell

Ulrich Spiegl, M.D.

fellowship in January of 2013. He had played soccer and tennis. He was a mountain biker and skier. Although his work now begins before daylight and often ends after dark, he still works out four or five days a week.

He learned to speak English in Germany and improved his language skills during a two-year exchange student program at Raytown High South, near Kansas City. He traveled to California, New York, and many states in-between, including Colorado. He loves America.

- Family history? ✓
- Sports background? ✓
- English skills? ✓
- Familiar with life in the U.S.? ✓

MULTIPLE SPECIALTIES

But there's more. After earning his Doctor of Medicine degree from Technical University in Munich, he also received specialty certification in orthopaedics and traumatology, emergency medicine, special trauma surgery, and sports medicine.

(continued on page 12)

Dr. Spiegl says the research conducted at the Steadman Philippon Research Institute has had a profound effect on the practice of sports medicine in Germany and other European countries. In addition to microfracture, developed by Dr. Steadman, and labral reconstruction, developed by Dr. Philippon, the research being conducted by Dr. Millett on joint resurfacing will soon have a major impact on the practice of sports medicine in Germany.

(continued from page 11)

Dr. Spiegl has always had a strong interest in research, as evidenced by more than 20 articles already in-press or published in the world's leading orthopaedic journals, including the *American Journal of Sports Medicine*, *Spine*, and the *Journal of Elbow Surgery*.

ARTHREX SPONSORSHIP

While participating in a fellowship program at the University of Leipzig, he read about SPRI's European Visiting Scholar Program. The program was developed and sponsored by Arthrex, Inc., an orthopaedic medical device company. Arthrex's founder and president, Reinhold Schmieding, has had a long-time interest in education.

"We are proud to work with these young visiting scholars", says Robert F. LaPrade, M.D., Ph.D., director of the International Scholar Program at SPRI. "These doctors are already making an impact on their respective home countries, and we expect them to become the leaders of a new generation of sports medicine scientists."

BUMP IN THE ROAD

Then came a bump in Dr. Spiegl's career path. By the time he got the information, another physician had already been selected as the 2013 European Visiting Scholar.

No problem. The person selected had to cancel. Dr. Spiegl, with the approval of his supervisor at the University of Leipzig, recommendations from prestigious physicians in Germany, and support from the Society for Arthroscopy and Joint Surgery, applied for the position. Two weeks later, back on the fast track, he was notified that he had been accepted, and four months later he began his work in Vail.

Dr. Spiegl's host family during his exchange student days in Missouri had moved to Denver—close enough for regular visits. Another sign.

- M.D./Orthopaedic surgery? ✓
- Sports medicine specialty? ✓
- Recommendations? ✓
- Publications? ✓
- Friends in Colorado? ✓

"Once accepted, I did more homework," recalls Dr. Spiegl. "I knew about Dr. Steadman because of the work he had done with famous soccer players and other athletes. He is very well known in Europe. But I was equally impressed when I learned about the other physicians and scientists at Steadman Philippon and the amount of information provided by their research."

PRODUCTIVE YEAR

At SPRI, Dr. Spiegl spent approximately 70 percent of his time on research projects and rotated among the various departments, but he worked very closely with Dr. Millett on investigations related to the shoulder.

"I was able to be involved with four case studies, in addition to five or six additional research projects. The year 2013 was very productive for the Research Institute and I was fortunate to be a part of that effort."

"One of the most important things I observed is the time physicians give their patients and the teamwork that exists in the Research Institute," says Dr. Spiegl. "If people have questions, they answer them. You don't get the feeling of being rushed. If one of the fellows or visiting scholars has an idea, it is easier to move forward with that initiative than at a bigger university or research facility. Those are just a couple of the many reasons

that make Steadman Philippon such a different place."

Dr. Spiegl completed his visiting scholar term earlier this year and has returned to the University of Leipzig. His goal is to complete the requirements for a Ph.D., continue to improve his surgical skills, and eventually return to his hometown of Murnau, a city near the southern border of Germany, to practice sports medicine.

Something he was destined to do.

• Bright future? ✓

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PATIENT AND RESEARCHER IN THE NEWS

Perseverance Plus Perspective Equals Success for Dawn Ommen, M.D.

By Jim Brown

Dr. Dawn Ommen, a Nebraska native and current SPRI research assistant, has brought a perspective to her work with Dr. Marc Philippon that may be unmatched. Who else can say she has been a NCAA Division I athlete, a college coach, a certified physical therapist, a hip surgery patient, a physician, and a medical researcher?

Dr. Ommen will be the first to tell you that none of her achievements have been easy. In fact, that's exactly what she recently told a group of young student-athletes in Colorado. Her never-ever-give-up attitude has put her in a position to make major contributions as a sports medicine physician and to inspire others to strive for ambitious goals.

FIRST BIG GOAL

"My first big goal coming out of high school was to play Division I college basketball," she recalls. "I didn't have a lot of scholarship offers, perhaps because I was short and slow. But I walked on at Kansas State and played for two years

Dawn Ommen, M.D.

before transferring to the University of Nebraska to graduate."

Her experience as a college athlete opened the door to be a college coach. She coached for one year at the University of Nebraska-Kearney and two years at the University of North Florida.

Her interest in sports and medicine led to graduate school and earning a Master of Physical Therapy degree at St. Ambrose University in Davenport, Iowa. "At the time, I thought about med school, but physical therapy seemed to be a natural way to go."

Dr. Ommen worked as a certified physical therapist for five years, part of that time as a wellness director of a program that won a national wellness award. She also helped the company decrease the bottom line on health insurance.

FIRST BIG OBSTACLE

Being a physical therapist added to her growing body of expertise and experience, but it led to what she describes as her first big obstacle. She suffered a hip injury while teaching a physical therapy student. The injury was misdiagnosed and mistreated for almost five years and included a procedure in which four screws were placed in her lower back. They didn't work.

That's when she heard about Dr. Philippon, who was then at the Univer-

(continued on page 14)

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sity of Pittsburgh—not exactly down the street from her home in Nebraska. "As the pain became more and more debilitating, I talked to a friend who had similar symptoms and who had been successfully treated by Dr. Philippon, and I was able to get an appointment with him."

Dr. Philippon eventually performed surgery on both of Dr. Ommen's hips, including the world's first ever ligamentum teres reconstruction via an iliotibial band. Since then, she has been able to return to a high level of competition and is an avid triathlete, snow skier, water skier, and weight lifter.

FIRST BIG FAILURE

Dr. Ommen continued to be a patient of Dr. Philippon after he moved to The Steadman Clinic and the Steadman Philippon Research Institute. She was inspired by the cutting-edge medicine she received.

"As a patient, it amazed me that every time I had an appointment or a procedure, there was always something new—whether it was a surgical technique, an anti-coagulation regimen, or a change in rehabilitation exercises," she says. "It's obvious that Dr. Philippon is continually seeking to improve his world-leading surgical outcomes."

Her experience with The Clinic and her awareness of the Research Institute motivated her to go to medical school, with the goal of becoming a sports medicine physician.

"Not so fast," she tells her audience. "I had to take the MCAT to get into school and I didn't score well enough."

"Should I try again?" she asked herself and her husband, Kevin, a high school math teacher and robotics coach in Nebraska.

"Yes," they both answered.

So she did take the MCAT again, scored well, was accepted, and graduated from the University of Nebraska College of Medicine in May of 2013.

BECOMING PART OF THE SPRI TEAM

During one visit to see Dr. Philippon, Dr. Ommen asked about the possibility of a research assistantship at SPRI. He liked the idea and arrangements were made for Dr. Ommen to spend a year working with Dr. Philippon on a variety of research projects, including what she thinks could become a landmark study on the effects of prehabilitation on hip arthroscopy.

"There is a phenomenal relationship between The Clinic and the Research Institute," says Dr. Ommen. "There is no wasted data here. Dr. Philippon and his colleagues are using that data to change what is going on in hip arthroscopy."

Dr. Ommen's medical records are part of SPRI's famous database. As a research assistant and former patient, she may be analyzing information taken from her own hip surgery procedures. Yet another perspective.

"I feel like I live and work at Disneyland out here in Vail," says Dr. Ommen.

THE DRIVING FORCE

A person cannot achieve what Dr. Dawn Ommen is achieving without tremendous support. That support, she says, has come from Kevin, her husband of 11 years.

"He has been the driving force. He's been with me through injuries, numerous surgeries, travel to get treatment, and getting me through school. He was the one who said you have to go back to medical school."

ON THE AGENDA

Dr. Ommen's medical training is not complete. She will soon learn where she will spend the next three years as a resident, and then there will be an additional year as a sports medicine fellow. Her long-term goal is to establish a sports medicine center that will address the surgical, rehabilitational, nutritional, and psychological needs of women athletes.

It sounds like a monumental task, but don't tell Dr. Ommen she can't do it. She has a well-documented record in the field of perseverance.

Soon she will be able to look at things from yet another perspective: that of a parent. Kevin and Dawn Ommen are expecting their first child in April.

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PATIENTS IN THE NEWS

Matt Antoine Wins Bronze Medal in Sochi Olympics

Wisconsin native follows his win in Sochi by taking the Men's U.S. National Skeleton Championship at Lake Placid

By Jim Brown

Who would want to slide on an ice track, headfirst more than 1,500 yards downhill on a 70-pound steel sled at speeds near 80 miles per hour?

Matthew Antoine of Prairie du Chien, Wisconsin, would, and he has been doing it for the past 12 years. He just capped his best season ever by becoming the first U.S. athlete to earn a medal at the Olympics since 2002 and by setting a track record in his win at the Nationals.

A few hours after his victory in Lake Placid, he spoke with *SPRI News* about his life and his career.

SPRI News: Is your life back to normal yet?

"I doubt that it will ever be as normal as it was before winning the bronze medal at the Olympics and the National Championships, but things will start to settle down sooner or later."

SPRI News: Why did you choose this sport?

"People often ask us if we are crazy. We're not crazy, but anyone who does this sport has to have a passion for speed. Growing up, I liked watching auto racing with my dad and my brother. I had a go-cart when I was a kid. I was convinced I was going to be a race car driver, but that didn't work out. I liked anything that went fast and always enjoyed winter sports. Skeleton brought all of those things together. After my first run down the track, I knew it was something I wanted to do."

Photo: Charlie Booker

Winter Olympian Matt Antoine competing in Sochi.

SPRI News: When did you start?

"I started competing when I was in high school and continued while I was in college, but there are only two tracks in the United States. In college, I tried to stay close to the one in Lake Placid."

SPRI News: What is a typical year of training and competition?

"The season lasts from October until March. We train most of the year. I'm taking about a two-month break after this past 2013-2014 season and will begin ramping it up again in mid-May. We train like track and field athletes."

"The Skeleton National Team trains at the U.S. Olympic Training Center in Colorado Springs, where we have living quarters and access to the facilities, coaches, sports medicine services, and sports nutritionists. It's a six-day week from 9:00 in the morning to approximately 4:00 in the afternoon."

"During our summertime training, we really focus on the push-start. At this level, everyone is experienced. They all

(continued on page 16)

Photo: Charlie Booker

Raising Matthew: Mary Antoine's Perspective on an Olympian's Success

Mary Elise Antoine is an author, cultural historian, and storyteller in Prairie du Chien, Wisconsin. She has three children. The oldest is Elise, who lives with her husband on a family farm in Iowa and is a high school social studies teacher. Nicholas is a government relations assistant with a consulting group in St. Paul. Matthew is the youngest—now an Olympic medalist and a national champion in men's skeleton. Here are Mary Antoine's reflections about raising Matthew.

EARLY SIGNS –

"At an early age, Matthew wanted to go down a sliding hill standing up on his sled. Of course, all I could envision was Matt falling off and hurting himself, so I tried to get him to stop. It didn't work."

DETERMINATION –

"What was noticeable in Matthew as a child was his determination. He would decide to do or make something. He would plan it out in his mind how to construct it and how it would work. He made a three-dimensional model of the solar system. He tried to invent an automatic dog-washing machine. He would become frustrated, but he would never quit. He later made recommendations to the USA Bobsled and Skeleton Federation regarding a new sled being developed."

BEHAVIOR –

"From an early age, my children knew what was expected of them regarding behavior in the family and in public. They had responsibilities at home and they knew they were expected to help my parents and elderly neighbors. The first job all three of my children had was bussing tables at a local restaurant. It taught them responsibility, how to take orders from others, and how to work with a variety of people."

THE IMPORTANCE OF EDUCATION -

"When Matthew came to me as a senior in high school and told me he wanted to compete in skeleton, I never had a second thought. But I made one stipulation. He had to attend college while he learned and mastered skeleton. (Matt's brother and sister both have master's degrees, as does Mary.) It took Matthew six years of classes, assignments, and tests while competing at the national level, but he has a degree in sports management."

[For a complete transcript of Mary Antoine's interview with SPRI News, go to sprivail.org]

(continued from page 15)

have the equipment, driving ability, and aerodynamics, but the push-start can make the difference."

(The push-start is when the competitor pushes his or her sled from a standing start as fast as possible over 30-35 meters—think of sprinting from the goal line to the 30-yard line on a football field—before getting onto the sled.)

SPRI News: What kinds of injuries typically affect skeleton athletes?

"Our injuries get compared to those in contact sports. Bumps, bruises, contusions, ice burns, and concussions, but I've never had a concussion."

SPRI News: What was your most serious injury?

"During the 2011-2012 season, my knee starting hurting. It got to the point where I was having trouble walking, going up and down stairs, and even sitting. I knew something was wrong, but I continued competing. There really wasn't much I could do about it at the time. It wasn't an injury that happened during a skeleton event or training, but it was a knee overuse injury."

SPRI: How did you come into contact with Dr. Peter Millett at The Steadman Clinic?

"He was recommended by our team physician and by a teammate who had been treated by Dr. Millett."

[Dr. Millett continues to use techniques developed by Dr. Richard Steadman and refined at the Steadman Philippon Research Institute.]

SPRI: What was his diagnosis?

"My knee was beyond a point where it would heal on its own. The patellar tendon had begun to break down and a third of it was torn off. I had scar tissue, damaged cartilage, and a hematoma that had formed under the tendon."

SPRI News: Why did you choose to have the surgery in Vail?

"I was looking for a positive prognosis following surgery. It was July and

the season was going to start in October. Eighteen months after that, I wanted to be ready for the Olympics. Dr. Millett was positive about me being able to compete not only in the upcoming season, but for the rest of my career."

SPRI News: What procedures did he perform?

"He removed the middle third of my patellar tendon, cleaned out scar tissue, repaired the damaged cartilage area, removed the hematoma, and drilled two holes through the patella to increase blood flow."

SPRI News: How would you describe your overall experience?

"Absolutely amazing. Start to finish, I was really impressed with how they approach things. They were thorough in what they did. They were realistic about what needed to be done after the surgery, but at the same time very aggressive about getting me back to sports performance."

"I would absolutely, hands-down, recommend Dr. Millett, the Clinic, and the Research Institute to other people and other athletes. It is the most professional and thorough medical provider I've ever experienced."

SPRI News: How is your knee now?

"It feels amazing—better than it did two years before surgery. I have no restrictions, and my outcomes in skeleton have been great since the operation."

SPRI: You've overcome some pretty serious obstacles to become an Olympic athlete and national champion. What message do you have for young athletes who might have Olympic aspirations?

"Stay positive and focused. Everyone who has ever been successful at this level has hit rock bottom at some point. Keep your eye on the goal and be persistent. Don't let the down times keep you down. Figure out a way to battle back."

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(Steadman Philippon Update, continued from page 3)

Award Winning Paper Lead Article in the *Journal of Orthopaedic Research*

"Improving Outcomes for Posterolateral Knee Injuries" by Robert F. LaPrade, M.D., Ph.D., is the lead article in the January 4, 2014, online and April print issue of the highly regarded *Journal of Orthopaedic Research*.

The research and subsequent publication resulted in the competitive and prestigious 2013 Orthopaedic Research and Education Foundation Clinical Research Award, referred as the "Orthopaedic Nobel Prize."

"This award solidly validates our research strategy of defining the anatomy, developing improved means of diagnosing a problem, redefining the clinically relevant biomechanics, developing improved radiographic diagnostic measures, developing biomechanically validated ligament reconstructions, and then validating these reconstructions in patient outcomes studies." said Dr. LaPrade.

The posterolateral corner of the knee stabilizes the joint. Posterior cruciate ligament injuries from external trauma or hyperextension are difficult to diagnose and treat, and can be debilitating and career-ending for gymnasts and other athletes who play soccer, basketball, or football. However, patient outcomes following treatment have significantly improved as a result of Dr. LaPrade's research.

Dr. LaPrade's collaborators on this paper included Lars Engebretsen, M.D., Ph.D. (University of Oslo, Norway), Steinar Johansen, M.D. (University of Oslo), Chad Griffith, M.D. (University of Minnesota), Benjamin Coobs, M.D. (University of Minnesota), and Andrew Geeslin, M.D. (Western Michigan University).

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(Steadman Philippon Update, continued from page 17)

SPRI Research Featured in Sochi Winter Games Issue of the *British Journal of Sports Medicine and International Olympic Committee Injury Prevention & Health Protection*

The two articles are prominently displayed in the table of contents:

"Epidemiology, identification, treatment and return to play of musculoskeletal-based ice hockey injuries," Robert F. LaPrade, Rachel K. Surowiec, Ada N. Sochanska, Brandon S. Hentkowski, Brandie M. Martin, Lars Engebretsen, and Coen A. Wijdicks;

"Injuries in elite and recreational snowboarders," Coen A. Wijdicks, Brandon S. Rosenbach, Troy R. Flanagan, Gillian E. Bower, Kelly E. Newman, Thomas O. Clanton, Lars Engebretsen, Robert F. LaPrade, and Tom R. Hackett

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DJO Cross Fellowship Awards Steadman Philippon Research Institute with Sports Medicine Fellowship Grant

The Steadman Philippon Research Institute's Sports Medicine Fellowship Program has been selected as a funding recipient of the 2014–2016 DJO Cross Fellowship Award. Kelly Stoycheff, SPRI'S fellowship and education coordinator, applied for and secured the $49,000 grant to support SPRI's sports fellowship.

All applicants were assessed against rigorous standards. This year, because there were more qualified applicants than available funding, the award recipients were chosen through a blinded selection process.

DJO is committed to the advancement of fellowship education programs and understands the importance of and need for highly trained, skilled medical professionals who are able to provide quality patient care in a broad range of settings.

Mike Mogul, president and CEO of DGO Global, Inc., commented, "We are very pleased to be able to support your training program. As a committed, long-time supporter of orthopedic innovation, education and patient care, DJO Global is pleased to recognize programs that provide highly trained, skilled medical professionals who are able to deliver quality patient care in a broad range of clinical settings. Congratulations and I wish you the very best with your Sports Medicine Fellowship Program."

DJO Global, Inc., a global provider of medical device solutions for musculoskeletal health, vascular health, and pain management, established The DJO Cross Fellowship Award program in honor of its former CEO, Les Cross. Through the Cross Fellowship Award, DJO Global will award funding for orthopedic fellowship programs and athletic training residency programs.

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Leading Orthopaedic Journal, *Knee Surgery, Sports Traumatology, Arthroscopy* Features SPRI Research

SPRI has eight articles (20 percent or one-fifth of all articles) in the special theme issue *Current Advances in Hip Arthroscopy* of the April edition of *Knee Surgery, Sports Traumatology, Arthroscopy* (Volume 22, Issue 4):

- "The hip fluid seal—Part I: the effect of an acetabular labral tear, repair, resection, and reconstruction on hip fluid pressurization," M.J. Philippon, J.J. Nepple, K.J. Campbell, G.J. Dornan, K.S. Jansson, R.F. LaPrade, and C.A. Wijdicks
- "The hip fluid seal—Part II: The effect of an acetabular labral tear, repair, resection, and reconstruction on hip stability to distraction," J.J. Nepple, M.J. Philippon, K.J. Campbell, G.J. Dornan, K.S. Jansson, R.F. LaPrade, and C.A. Wijdicks
- "The hip labrum reconstruction: indications and outcomes—a systematic review," O.R. Ayeni, H. Alradwan, D. de Sa, and M.J. Philippon
- "Surgical management of labral tears during femoroacetabular impingement surgery: a systematic review," O.R. Arena, J. Agamic, F. Farrokhyar, N. Simunovic, S. Crouch, M.J. Philippon, and M. Bhandari

- "Radiographic prevalence of CAM-type femoroacetabular impingement after open reduction and internal fixation of femoral neck fractures," G. Mathew, M. Kowalczuk, B. Hetaimish, A. Bedi, M.J. Philippon, M. Bhandari, N. Simunovic, S. Crouch, and O.R. Ayeni
- "Alpha angle correction in femoroacetabular impingement," D. de SA, N. Urquhart, M. Philippon, J-E. Ye, N. Simunovic, and O.R. Ayeni
- "Intra-articular adhesions following hip arthroscopy, a risk factor analysis." S.C. Willimon, K.K. Briggs, and M.J. Philippon
- "Performance outcomes in professional hockey players following arthroscopic treatment of FAI and microfracture of the hip," J.E. McDonald, M.M. Herzog, and M.J. Philippon

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Kennedy Lectureship Honors SPRI Advisor, Lars Engebretsen, M.D., Ph.D.

Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS)

One of the highlights of each year's Sports Medicine Specialty Day, March 15th this year, is the John C. Kennedy Memorial Lectureship. Dr. Lars Engebretsen, a member of the Institute's Scientific Advisory Committee, was honored as the Distinguished Lecturer for 2014. An internationally recognized authority in orthopaedic sports medicine, Dr. Engebretsen serves in many capacities, including professor and chair, University of Oslo; professor in Sports Medicine, Norwegian School of Sports Science; professor in Sports Medicine, Oslo Sports Trauma Research Center; and head of Medical Sciences, International Olympic Committee.

In 2001, Dr. John Feagin, also a member of the Scientific Advisory Committee and professor emeritus of orthopaedic surgery at Duke University, was honored as the Distinguished Lecturer.

This lectureship is named in honor of John C. Kennedy, M.D., F.R.C.S., a past president of the American Orthopaedic Society for Sports Medicine.

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SPORTS AND WELLNESS

High-Altitude Sickness

By Evan W. James, B.S., Christopher M. LaPrade, B.A., Robert F. LaPrade, M.D., Ph.D.

Editor's Note: Evan James is a research assistant in the department of Clinical Outcomes-Based Orthopaedic Research and Chris LaPrade is a research assistant in the department of Biomedical Engineering

Many people live, work, and play at high altitudes. The town of Vail sits at 8,150 feet (2,484 meters) and welcomes thousands of skiers, snowboarders, hikers, mountain bikers and other visitors from around the globe each year.

Other cities and larger metropolises located at high altitudes, such as Denver at 5,280 feet (1,609 meters) or Mexico City at 7,943 feet (2,421 meters), receive numerous business and leisure travelers. It is estimated that up to 25 percent of visitors to elevations above 7,500 feet experience some form of high-altitude sickness. Therefore, it is critical to recognize the symptoms of altitude sickness and to understand appropriate treatment and prevention strategies.

WHAT IS HIGH-ALTITUDE SICKNESS?

There are three major forms of high-altitude sickness: acute mountain sickness (AMS), high altitude cerebral edema (HACE), and high altitude pulmonary edema (HAPE).

- AMS is the most common form of high-altitude sickness and is caused by rapid travel to high altitude. Symptoms of AMS include headache, fatigue, tiredness, dizziness, insomnia, and gastrointestinal disturbance.
- HACE is related to AMS but presents with more extreme and dangerous symptoms. With HACE, the brain swells with fluid, which occurs when the body fails to acclimatize to the high altitude. Symptoms of HACE can include severe confusion, difficulty walking, and hallucinations, eventually leading to coma or death.
- HAPE is relatively uncommon and

(continued on page 20)

Dr. Rob LaPrade and Evan on top of Mount Elbert, Colorado, elevation 14,440 feet (4,401 meters), the second highest peak in the contiguous United States and the highest peak in Colorado.

(continued from page 19)

occurs at moderate to extreme altitudes. HAPE results in fluid accumulation in the lungs in otherwise healthy individuals. Symptoms often begin with shortness of breath and a dry cough, but may progress to a phlegmy cough with rapid breathing and a racing heart.

WHAT CAUSES HIGH-ALTITUDE SICKNESS?

High-altitude sickness is caused by a phenomenon called hypobaric hypoxia. Hypobaric means that the atmospheric pressure at high altitude is lower than at sea level. Because the pressure is lower, less oxygen is transferred to the blood and therefore less oxygen is delivered throughout the body, including to the brain, heart, and muscles. This creates a condition called hypoxia, in which the body is starved for oxygen. In response, the nervous system becomes hyperactive and attempts to compensate by increasing breathing, heart rate, and blood flow to the brain. The combination of these physiologic changes can lead to a wide array of symptoms, ranging from a mild headache or feelings of fatigue to a life-threatening build-up of fluid in the brain or lungs.

WHO GETS HIGH-ALTITUDE SICKNESS?

Four factors increase the risk of experiencing high-altitude sickness: the rate of ascent, history of previous high-altitude sickness, physical activity, and final elevation gain. If you have experienced high-altitude sickness in the past, know that you are at an increased risk for recurrence, and preventative measures are strongly encouraged. Individuals that engage in strenuous activity without first acclimatizing to higher altitude also may be putting themselves at risk of experiencing high-altitude sickness.

HOW IS HIGH-ALTITUDE SICKNESS TREATED?

The cardinal rule for treating high-altitude sickness is to descend to a lower altitude as quickly as possible. Acute high-altitude sickness is often self-limiting and typically resolves in two or three days. HACE and HAPE are more serious and require immediate medical attention and descent to lower altitudes. When high-altitude sickness is suspected, activity should be stopped. Aspirin, acetaminophen, or ibuprofen may be used to relieve headaches associated with AMS. Diamox (acetazolamide) is recommended for AMS, HACE, and HAPE. It works by increasing kidney disposal of bicarbonate, a hypoxia byproduct, which in turn triggers an increased breathing response that stimulates the natural acclimatization process.

Other medications, such as dexamethasone – a corticosteroid, can be used to treat all forms of high-altitude sickness, though they are best reserved at least for more serious cases of AMS. Recommended dosing is an initial 8 mg dose followed by 4 mg every six hours. Finally, nifedipine, a calcium channel blocker, has also been shown to be effective for HAPE.

HOW CAN I PREVENT HIGH-ALTITUDE SICKNESS?

Acclimatization is the key for preventing altitude sickness when traveling to higher elevations. A gradual ascent to higher altitude at a rate of less than 1,500 feet per day is recommended. If possible, sleeping at a lower altitude may offer some benefit because high-altitude sickness depends more on sleeping altitude than the maximum altitude reached.

If a rapid ascent is unavoidable based on your travel plans, talk to your doctor about preventative medications. A prophylactic course of 125 mg of Diamox (acetazolamide) taken twice per day may be started 24 hours prior to traveling to higher altitude and continued until returning to lower altitudes.

Finally, proper hydration is essential. While breathing, a small amount of water vapor is lost with each exhale. When traveling to higher altitudes, the body compensates for the lack of oxygen in the air by breathing faster. This, in turn, increases the risk for dehydration through normal breathing as the body adjusts to the higher altitude. Fluid replacement using water or sports drinks with electrolytes is recommended.

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FREQUENTLY ASKED QUESTIONS

HOW DO CONTRIBUTIONS TO SPRI MAKE A DIFFERENCE?

Unrestricted gifts provide flexible funding that we can direct wherever it's needed most. Here are a few examples of ways philanthropy from individuals advanced our ability to keep active people active in 2013.

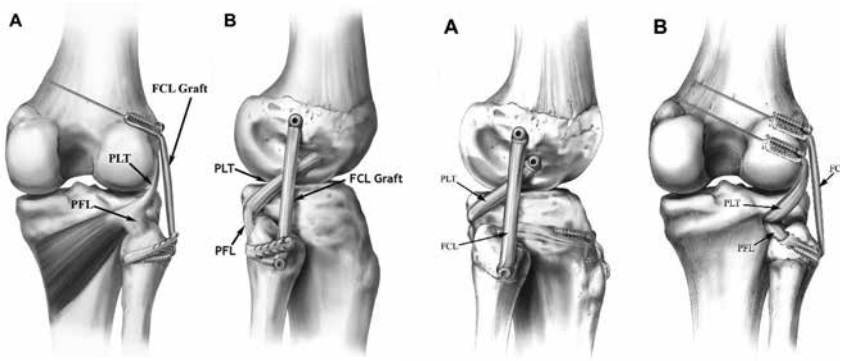
IMPROVING OUTCOMES FOR POSTEROLATERAL KNEE INJURIES

The posterolateral corner (PLC) of the knee stabilizes the joint. PLC injuries from external trauma or hyperextension are difficult to diagnose and treat. They can be debilitating, and career-ending for gymnasts and other athletes who play soccer, basketball, or football.

A team led by SPRI's Dr. Robert LaPrade recently completed a comprehensive research program to improve understanding of the complex anatomy of the posterolateral knee. Investigators studied PLC diagnostic approaches, surgical techniques, and post-op protocols. They then developed better radiographic diagnostic measures, and biomechanically validated ligament reconstructions. Patient outcomes following treatment have significantly improved using these methods."

Dr. LaPrade presented the team's findings in 2013 at the Annual Meetings of the Orthopaedic Research Society and the American Academy of Orthopaedic Surgeons.

FCL *PLC*



Outcomes after fibular collateral ligament (FCL) injuries have improved with Dr. LaPrade and colleagues' FCL reconstruction technique. Reprinted with permission from Am J Sports Med 2007; 35(9):1521-1527.

Dr. LaPrade and colleagues developed a novel complete posterolateral corner (PCL) reconstruction technique which has since been validated through biomechanical testing and clinical outcomes studies. Reprinted with permission from Am J Sports Med 2004;32(6):1405-14.

With donor support, this team is engaged in similar programs to improve understanding of the knee's medial collateral ligament, anterior cruciate ligament, and posterior cruciate ligament.

ARTHROSCOPIC TREATMENT FOR PATIENTS WITH OSTEOARTHRITIS OF THE KNEE

Over the years, philanthropic gifts helped Dr. Richard Steadman and his team at SPRI develop "The Package," a comprehensive series of procedures to treat and preserve pre-arthritic and arthritic knees. Patients who have received "The Package" have been understandably worried about if or when they might require total knee replacement (TKR).

Long-term monitoring by SPRI of the repaired knee's "survivorship" has shown that many patients have been able to delay TKR for up to 10 years. Thanks to donor support, this landmark study was shared with the world through its publication in 2013.

Bringing home a Bronze from the Winter Olympics in Sochi!

"Skeleton" is a winter sport in which an athlete push-starts a small sled and leaps onboard to race headfirst down an ice track at 80 miles per hour. Matt Antoine has been competing in the sport for 12 years. In 2012, when chronic knee pain had reached the point where he had trouble walking, climbing stairs, and even sitting, he turned to SPRI's Dr. Peter Millett.

(continued on page 22)

(continued from page 21)

Using "The Package" developed by Dr. Steadman and refined by SPRI, Dr. Millett removed part of Matt's patellar tendon that had torn off, cleaned out scar tissue, repaired damaged cartilage, removed a hematoma under the tendon, and drilled two holes through the patella to increase blood flow.

"It was July and the season was going to start in October," Matt recalls. "Eighteen months after that, I wanted to be ready for the Olympics. Dr. Millett was positive about me being able to compete not only in the upcoming season, but for the rest of my career."

Matt says his knee feels better now than two years before surgery. And this February, he became the first U.S. member of the skeleton team to earn an Olympic medal since 2002: a bronze!

A NEW LANDSCAPE FOR HIP SURGERY

Injuries to the acetabular labrum (cartilage lining the rim of the hip socket) can be caused by impingement (mechanical disorder), dysplasia (abnormal formation), and acute trauma. Female athletes are more susceptible due to their pelvic anatomy.

Thanks to philanthropic support, SPRI has validated the long-term results of an innovative technique, developed by Dr. Marc Philippon and his team, in which the labrum is reconstructed using a segment of the patient's own iliotibial band—fibrous tissue extending from the upper hip to the tibia, a bone in the lower leg.

The results, published in 2013, show 76 percent of patients monitored for between 36 and 70 months after the operation reported high satisfaction with the outcome—changing the landscape of arthroscopic hip surgery.

These achievements are just a few examples of how contributions result in life-changing, patient-centered care through procedures developed or refined at SPRI. Please give generously to advance our vision in 2014—and be part of our world-class team!

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SAVE THE DATES

July 14th, Darius Rucker to Headline Summer Benefit Concert, Rock the Research

Capitol recording artist and country star, Darius Rucker—a former patient of Dr. Richard Steadman—will show his support for the Steadman Philippon Research Institute as he returns to headline the Institute's annual summer fundraising concert.

This year's event, "Rock the Research," will take place Monday, July 14th at the Gerald R. Ford Amphitheater in Vail, Colorado. All proceeds from the concert will fund new research into treatments for orthopaedic injuries and conditions—most notably in the areas of joint preservation, joint restoration and osteoarthritis research, along with some new initiatives in youth sports injury prevention.

As a follow-up to previous sold out events, Rucker will return to Ford Amphitheater for a live concert. Attendees may purchase lawn or pavilion seats. Those who purchase VIP tickets will also enjoy pre-concert hors d'oeuvres at the amphitheater and a sit-down dinner with a live auction at Larkspur Restaurant immediately following the concert.

Previous concerts have been extremely successful in attracting Darius' fans from all of Vail's surrounding communities and the Denver area who were anxious for the rare opportunity to see this superstar in such an intimate venue. We are grateful to have him join us again. As a former patient of Dr. Steadman, Darius understands the important role that the Steadman Philippon Research Institute plays in validating the leading-edge treatments developed by the scientists and physicians.

To purchase tickets, please call the Gerald R. Ford Amphitheater box office at (888) 920-2787 or visit www.RockTheResearch.com. Event information will be

Darius Rucker in Concert.

updated on the Steadman Philippon Research Institute's website, www.sprivail.org, or you can follow them on Facebook at www.facebook.com/steadmanphilippon.

For information on the dinner and auction (includes pavilion seating for concert), please call Lynda Sampson at (970) 479-1563 or email info@RockTheResearch.com. Tickets for the "Rock the Research" concert and VIP event are currently on sale.

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Steadman Philippon Golf Tournament

The Vail Valley Medical Center 2014 Steadman Philippon Research Institute Golf Classic Presented by RE/MAX International Set for August 14, 2014

Proceeds will support the orthopaedic research and educational programs of the Steadman Philippon Research Institute.

The team event held at Sanctuary Golf Course, in Sedalia, Colorado, just south of Denver, will include a shotgun start with a modified scramble. The tournament is open to the public. Sanctuary organizes and hosts charitable events to support organizations devoted to the arts, children, health care, and crisis management.

Since 2004, the Institute has raised more than $1.3 million from this golf tournament to support its research programs. Renowned course architect Jim Engh, Golf Digest's first-ever "Architect of the Year," designed the course that protects a private oasis of 220 acres, effectively complementing the 40,000 surrounding acres of dedicated open space.

The Steadman Philippon Research Institute is grateful to Dave and Gail Liniger, owners and co-founders of RE/MAX, LLC., who built this course and created this unique fundraising opportunity for the Institute to develop and enhance relationships with those who support our mission.

Sponsorship opportunities and team slots are available now. More information can be obtained by visiting our website (www.sprivail.org) under "Upcoming Events," or by calling the Development office at (970) 479-5781. To request an invitation or for more information on other upcoming events, please contact John McMurtry at the Steadman Philippon Research Institute, (970) 479-5781 or mcmurtry@sprivail.org.

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The Steadman Philippon Research Institute is dedicated to keeping people of all ages physically active through orthopaedic research and education in the areas of arthritis, healing, rehabilitation, and injury prevention.

Mark Your Calendar:

JULY 14, 2014
Rock the Research
Darius Rucker in Concert
Gerald R. Ford Amphitheater
Vail, Colo.
For more information, contact Lynda Sampson at (970) 479-5809 or lsampson@sprivail.org

AUGUST 14, 2014
Vail Valley Medical Center 2014 Steadman Philippon Research Institute Golf Classic, presented by RE/MAX, LLC, at Sanctuary,
Sedalia, Colo.
For more information, contact John McMurtry at (970) 479-5781 or mcmurtry@sprivail.org

Executive Editor:
Jim Brown, Ph.D.

SPRI has a Facebook page! Search for "Steadman Philippon" on Facebook and click "like" on our page. Watch our wall for updates on our research as well as lecture series, orthopaedics in the news and more!