



Research Foundation

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Patients in the News

Philip Elder: Foundation Hall of Fame Candidate?

By Jim Brown, Ph.D.

Editor's Note: Jim Brown is the Executive Editor of the *Sports Performance Journal*, a publication of Athletes' Performance in Phoenix, and a contributing writer to The *UCLA Arthritis Update* and *Health News*.

A Steadman♦Hawkins Research Foundation Hall of Fame, if it existed, would consider candidates such as John Elway, Bruce Smith, Bode Miller, Judy Collins, Picabo Street, Joe Montana, and Philip Elder. Philip Elder? continued on page 8



Sports and Wellness

Winter Outdoor Fitness

By Michael Wahoff, P.T.; Shannon Irish, M.P.T., O.C.S.; and Zach DiCristino, M.S.P.T.

Editor's Note: The authors are all outpatient orthopaedic and sports physical therapists at Howard Head Sports Medicine Center in Vail, Colo.

Cold weather and short days are signs that winter is here. This often means stashing away the bikes and hiking shoes and hibernating in the gym. Many of us feel that we have to modify our active lifestyles to only treadmills and stairsteppers in order to maintain the fitness we have gained over the summer. Most of us can run or bike in place for just so long until our routine becomes stale and our interest wanes. Don't let this be you. Winter outdoor fitness can be fun and add variety

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Steadman-Hawkins Research Update

Biomechanics Research

By Michael R. Torry, Ph.D.; Kevin Shelburne, Ph.D.; Erik Giphart, Ph.D.; and Takashi Yanagawa, M.A.

Editor's Note: Dr. Torry is the Director, Dr. Shelburne is the Assistant Director, Dr. Giphart directs the Motion Laboratory, and Mr. Yanagawa is a senior programmer of the Biomechanics Research Laboratory at the Steadman♦Hawkins Research Foundation.

Musculoskeletal joints are intricate mechanisms composed of soft tissues (muscle, ligaments, cartilage) and bone that must stretch, twist, and flex in order to handle extreme loads of pressure. For instance, even during a seemingly simple action like walking, the inside of the knee must be able to withstand 1,500 pounds per square inch.

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Photo: John Kelly

Unmatched Tax Benefits Between August 28 and December 31

Unmatched tax benefits were signed into law by the president on September 23 after the House and Senate passed the Hurricane Katrina relief bill. The bill is meant to encourage outright gifts of cash to qualified tax-exempt organizations between August 28, 2005, through December 31, 2005.

Importantly, this contribution can be to any public charity, whether or not it is engaged in Katrina relief, or whether or not the contribution is unrestricted or designated, such as for an endowment. The bill aims to promote continued support to other organizations so they do not suffer because contributions they normally count on were diverted to relief efforts.

Highlights of the Bill:

- ◆ You can make an indescribable difference by giving more during this time frame.
- ◆ The deduction contribution limit for certain outright gifts of cash has increased from 50 percent to 100 percent of adjusted gross income (AGI).
- ◆ These same outright gifts of cash also are exempt from the 3 percent reduction in itemized deductions for individuals with an AGI over \$145,950.
- ◆ Cash gifts to a private foundation, supporting organization, or donor advised fund do not qualify for the higher limit or the 3 percent rule exemption.

Charitable Deduction Limit Raised to 100 Percent of Adjusted Gross Income

These changes dramatically increase the amount of outright cash contributions you

can make during calendar/tax year 2005. Under existing law, the maximum amount of cash contributions that is deductible in any one year is 50 percent of AGI. That is being increased to 100 percent of AGI for qualified cash gifts made during this period. It also means there is no adjustment for contributions subject to the 3 percent rule.

An Opportunity for Giving Through Your Qualified Retirement Plans and IRA

Because of the increase in the deduction limit, if you have more funds in your qualified plan or IRA than you may need for retirement, and if you are at least 59½, you could consider withdrawing assets and contributing them to the Foundation as another tax-wise strategy during this time period. Upon withdrawing the funds, they will be added to your AGI. However, that amount will also be deductible, essentially creating a wash while playing an invaluable role in supporting our mission and that of other organizations. This type of gift has important considerations to take into account and your advisor should be consulted.

Create a Transformation

Let us help you make the difference you want to make in research, surgery, and treatment of arthritis and degenerative joint disease. Please contact John McMurtry, (970) 479-5781, and let us help you transform people's lives.

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Scientific Process Leads to Improved Patient Care

Inside Steadman-Hawkins: The Scientific Advisory Committee

by Jim Brown, Ph.D., contributing writer, The *UCLA Arthritis Update*, and Executive Editor, *Sports Performance Journal*

The meeting begins at 8 a.m. in a conference room deep in the Vail Valley Medical Center. For the next two days, 13 of the world's preeminent scientists will assemble to consider proposals and reports that may change the direction of orthopaedic care around the world. They will listen, take notes, ask questions, and provide feedback to Steadman-Hawkins Research Foundation physicians, researchers, educators, and fellows. Now four of those committee members provide a glimpse of the work that goes on inside the Scientific Advisory Committee (SAC).

"Our role is to be a scientific resource for the Foundation, to help give its work direction, and to provide midcourse corrections in terms of research efforts and the Foundation in general," says Dr. Steven Arnoczky, Director of the Laboratory for Comparative Orthopaedic Research at Michigan State University. "We are a kind of liaison between the basic science ideas of Dr. Steadman, Dr. Hawkins, and their colleagues, and the realization of those ideas in a clinical setting."

The Meeting

When Dr. William Rodkey, chairman of the committee and Director of Basic Science Research at the Foundation, calls the meeting to order, he has planned an agenda that includes presentations from each outgoing Fellow, as well as from the heads of the four departments at the Foundation — Basic Science Research, Clinical Research, Biomechanics, and Education. Each Fellow is allowed 30 minutes to give the status of his or her research endeavor. "The committee listens to each presentation and offers constructive criticism that will help the Fellow make presentations at major meetings and to get the research published in peer-reviewed scientific journals," explains Dr. Rodkey. "Also in the room that day is the incoming class of Fellows. These young physicians listen to the presentations, discussions, and critiques. This gives them an early learning experience that might help them solidify a research idea or

WHAT'S OUR MEASURE OF SUCCESS?

You! You help us change people's lives for the better — from experiencing the debilitation of chronic arthritis and joint problems to a life restored to quality and activity.

What if your support could make that difference and provide you and your family with lifetime income at the same time? Funding a charitable remainder trust can do just that — create an endowed fund for our programs, change lives, and pay out a lifetime income.

To learn more, contact John McMurtry at (970) 479-5781 or john.mcmurtry@shsmf.org



hear about an ongoing project they would like to pursue.”

Following the Fellows’ presentations, each department head summarizes the achievements of the past year — publications, presentations, projects, awards — and gives the SAC a preview of what their departments are working on for the future. They are subject to the same kind of scrutiny given to the Fellows. There is on-the-spot feedback, give-and-take discussion, and advice based on the experience and knowledge of world-class researchers.

Dr. John Feagin, Emeritus Professor of Orthopaedics at Duke University, says, “The worst thing that can happen is to waste time on a poorly designed study or one that doesn’t have scientific merit. The committee prevents the Foundation from going down dead-end roads.” After all the presentations have been made, the committee goes into an executive session to shape its official response for each person and department that has participated in the meeting.

The committee’s involvement does not end with the meeting. In fact, it’s just the beginning. Each member is available for scientific consultation throughout the year. Dr. Rodkey points out that Steadman-Hawkins staff members and Fellows rely on committee members quite heavily throughout the year. “I can call any SAC member, tell him that I’m working on a certain project, and that I need guidance. I know my call will be returned and that I’ll get feedback from a person who is an internationally recognized authority in his field.”

The Process

The public can become frustrated with the time it takes to get an idea from the drawing board to the clinical level. But the scientific process is slow for a reason. Although some studies can be completed in a year or two, Dr. Feagin says researchers almost have to think in ten-year time frames. At the beginning, somebody has an idea — an intuition — about a new procedure or technique. That idea has to be formalized. A working hypothesis must be developed and a study designed. Then a group of peers reviews the proposal and sends it back for further refinement before an investigation takes place. Although this is common in the academic community, it is rare in private practice. “This is why the Scientific Advisory Committee is important to the research process,” explains Dr. Savio

Woo, Ferguson Professor and Director of the Musculoskeletal Research Center at the University of Pittsburgh. “The committee challenges the person who proposes a study,” cautions Dr. Woo. “We can’t just automatically approve a novel method or research proposal. We take the position that you have to show us.” He adds that, at times, the scientific process tells you to change. An idea that was brought forward several years ago may have evolved into a different concept today.

After the data have been gathered and analyzed, conclusions are drawn and a scientific presentation or paper is prepared. Many peer-reviewed journals won’t even consider publishing a study until after a two-year follow-up period. “Slow and steady wins the race,” says Dr. Arnoczky, “but the SAC can optimize the process to make it as short as possible.”

“Even when a breakthrough procedure such as microfracture or the healing response has been recognized as a viable medical option,” adds Dr. Feagin, “it takes time for it to become a widespread practice. Ten years ago very few orthopaedic surgeons used microfracture. Now as many as 85 percent of them use it.”

The Future

At any given time, the Scientific Advisory Committee is consulting with Steadman-Hawkins researchers on 25-30 studies that could have a significant, global impact. The SAC members agree that one of the most exciting current investigations is an attempt to identify and reverse the biochemical factors that trigger arthritis. Another is designed to reduce the incidence of scar tissue following knee surgery that develops in 7 percent of patients. A third is experimenting with gene therapy to manipulate the body’s own cells in ways that will activate the healing process. In a fourth project, a computer model is being developed that will enable scientists to determine what happens inside the knee during motion, which tissues are under stress, and which factors specifically contribute to injuries.

Dr. Woo sums up the work of the committee this way: “Dr. Steadman has brought together some of the best people in the world to serve on the Scientific Advisory Committee. It reflects what the Foundation has become, which is a world-class research institution. All of us want to move forward to exploit the strengths of the Foundation.” The ultimate goal is to ensure that the scientific process leads to improved patient care.



William G. Rodkey, D.V.M.



John A. Feagin, M.D.



Steven P. Arnoczky, D.V.M.



Savio L-Y Woo, Ph.D., D.Sc. (Hon.)

Photo: John Kelly



Dr. Steadman Awarded Prestigious Honor

American Orthopaedic Society for Sports Medicine Bestows Highest International Honor to Dr. Steadman.



Photo: John Kelly

Dr. Richard Steadman has been honored by the American Orthopaedic Society for Sports Medicine (AOSSM) with a prestigious award in the field of sports medicine, the *2005 Mr. Sports Medicine* accolade. The 2005 Mr. Sports Medicine award is in recognition of Dr. Steadman's significant contributions to orthopaedics and sports medicine throughout his career.

The honor is bestowed annually on a person who has provided outstanding and meritorious service and made significant contributions in the field of orthopaedic sports medicine both nationally and internationally.

Dr. Steadman, who heads the Steadman-Hawkins Clinic at the Vail Valley Medical Center, is the first Coloradan to receive the honor. The award was presented in Keystone, Colo., at the annual American Orthopaedic Society for Sports Medicine meeting attended by over 1,100 physicians.

"To be recognized by our peers is truly a great honor," said Dr. Steadman. "I genuinely believe this is a reflection of all the work that has been done both here at the clinic and through our research foundation. This award is a great credit to our team, to the Foundation, to the Vail Valley Medical Center and the Vail community."

The Steadman-Hawkins Research Foundation is dedicated to keeping people of all ages active through orthopaedic research and education in the areas of arthritis, heal-

ing, rehabilitation and injury prevention. Procedures that were developed and validated over many years by Foundation researchers are routinely used today by orthopaedic surgeons everywhere.

Through its four critical areas of emphasis — basic science, biomechanics, education, and clinical research — this Foundation has developed, validated, and disseminated to the broader orthopaedic community such innovative and important surgical techniques as the microfracture and healing response techniques.

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Stavros S. Niarchos Foundation Awards \$450,000 Grant to Foundation for Arthritis Research

The Stavros S. Niarchos Foundation has awarded a substantial research grant to the Steadman-Hawkins Research Foundation to study the benefits of surgically removing scar tissue in the knee. Scar tissue in the joint lining is a factor that can limit motion of the joint and contribute to unfavorable joint pressure resulting in arthritis.

The Stavros S. Niarchos Foundation, an international philanthropic organization, supports charitable activities in four primary areas: arts and culture, education, health and medicine, and social welfare. The Foundation

makes grants to nonprofit organizations throughout the world. In addition, the Niarchos Foundation maintains a major commitment to supporting programs in Greece. Since its inception in 1996, the Stavros S. Niarchos Foundation has provided total grant commitments of \$224 million to more than 1,000 nonprofit organizations.

Scarring of the knee joint causes changes in the way the knee joint normally moves. This altered motion leads to abnormal loading inside the joint that can eventually degrade the cartilage of the knee and result in osteoarthritis. In the United States alone, the cost for treating osteoarthritis and its complications is almost \$65 billion. When considering its worldwide economic impact, this figure is estimated to be over \$750 billion annually. Although most orthopaedic surgeons acknowledge the presence of scar tissue in people who are experiencing pain in their knee, it has been difficult to surgically address this condition because the science behind the treatment is lacking. The removal of scar tissue may be a needed surgical procedure that can promote normal motion and biomechanics, thus sparing the joint from further degeneration.

The total budget of the three-year study is \$1.2 million, with the Steadman-Hawkins Research Foundation committed to raising an additional \$720,000.

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Photo: John Kelly



Steadman-Hawkins Update

Publications, Presentations, and Research

Karen Briggs, M.B.A., M.P.H., reports that the Foundation has had another very productive spring and summer with numerous papers being accepted by prestigious medical and scientific societies and journals.

The 10th **World Congress on Osteoarthritis**, Boston, December 8-11, 2005 has accepted three posters for presentation:

“Kellgren-Lawrence Scores and Arthroscopic Findings in the Degenerative Knee.” A. J. Ramappa, M.D.; J.R. Steadman, M.D.; R.B. Maxwell, M.D.; K.K. Briggs, M.B.A., M.P.H.; W.G. Rodkey, D.V.M.

“Expectations of Treatment in Patients 50 Years or Older with Osteoarthritis of the Knee.” K.K. Briggs, M.B.A., M.P.H.; J.R. Steadman, M.D.; W.I. Sterett, M.D.; W.G. Rodkey, D.V.M.

“Patient Outcomes Following an Arthroscopic Treatment Regimen for Severe Osteoarthritis of the Knee.” J.R. Steadman, M.D.; A. J. Ramappa, M.D.; K.K. Briggs, M.B.A., M.P.H.; W.G. Rodkey, D.V.M.

The **American Public Health Association 133rd Annual Meeting**, Philadelphia, December 9-13, 2005 has accepted one podium and one poster presentation:

“Expectations of Treatment in Patients with Osteoarthritis.” K.K. Briggs, M.B.A., M.P.H.; J.R. Steadman, M.D.

“Predictors of Decreased Function and Activity Level in Patients Seeking Treatment for Osteoarthritis of the Knee.” K.K. Briggs, M.B.A., M.P.H.; J.R. Steadman, M.D.

The **73rd Annual Meeting of the American Academy of Orthopaedic Surgeons**, Chicago, March 22-26, 2006, has accepted three podium and three poster presentations highlighting Foundation research, and three teaching videos.

The Academy provides education and practice management services for orthopaedic surgeons and allied health professionals. The Academy also serves as an advocate for improved patient care and informs the public about the science of orthopaedics. Founded as a not-for-profit organization in 1933, the

Academy has grown from a small organization serving less than 500 members to the world’s largest medical association of musculoskeletal specialists. The Academy now serves about 24,000 members internationally.

Podium Presentations

“Return to Sport Following Arthroscopic Decompression for Femoroacetabular Impingement in Athletes.” M. J. Philippon, M.D.; K.K. Briggs, M.B.A., M.P.H.

“Patient Knee Function and Activity Level Five Years Post-Arthroscopy Compared to Normal Values.” K.K. Briggs, M.B.A., M.P.H.; S. Hines, M.D.; J.R. Steadman, M.D.

“Detection of Partial Tears of the Ligamentum Teres of the Hip Using MR Arthrography.” M.J. Philippon, M.D.; D.R. Armfield, M.D.; R. Martin, M.D.; J. Towers, M.D.; D.D. Robertson, M.D.; B.T. Kelly, M.D.

Poster Presentations

“Lysholm Score and Tegner Activity Level in Normal Knees.” K.K. Briggs, M.B.A., M.P.H.; S. Hines, M.D.; J.R. Steadman, M.D.

“Psychometric Properties of the IKDC Score for Meniscus Injuries of the Knee.” K. Crawford, M.D.; K.K. Briggs, M.B.A., M.P.H.; W.G. Rodkey, D.V.M.; J.R. Steadman, M.D.

“Three- to Five-Year Follow-Up of Hip Arthroscopies in Professional Golfers.” M.J. Philippon, M.D.; K. Crawford, M.D.

Video Presentations

“Arthroscopic Management of Femoroacetabular Impingement.” Allston J. Stubbs, M.D.; Marc J. Philippon, M.D.

“Hip Arthroscopy Set-Up and Anatomically Guided Portal Placement.” Allston J. Stubbs, M.D.; Marc J. Philippon, M.D.

“Triceps Tendon Ruptures in Professional Football Players.” Laurence R. Laudicina, M.D.; Theodore E. Schlegel, M.D.; Scott D. Mair, M.D.; Richard J. Hawkins, M.D.

Awards

At the **Arthroscopy Association of North America Annual Meeting** Vancouver, May 12-14, 2005, former Steadman-Hawkins Fellow Douglas J. Lowery, M.D., was presented with the “Genzyme Biosurgery Scholarship” for the paper he authored: “Determining Positive Predictive Values in Prediction of Meniscal Tears Based on Patient Exams.”

Board of Directors in the News



Congratulations to Foundation Board member **George Gillett**, who was inducted into the **Colorado Ski Hall of Fame** on Oct. 22. When George bought Vail and Beaver Creek resorts in

1985, he completely redefined the ski experience. In striving to create the ultimate family winter escape, and to deliver a convenient, quality guest experience with service that was second to none, George oversaw a massive installation of high-speed detachable chairlifts at Vail as well as demanding more groomed slopes. He also developed centralized reservations for Vail where families could get their lodging, lift tickets, and airfare in a customer-friendly, one-stop shopping manner. These strategies kick-started the transformation that would propel the resort to its status as America’s number one ski destination.

In addition, George supported major alpine ski events at a time when most ski areas in America declined to host international races. Through his perseverance and ability to assemble a dedicated community-based team, Vail secured and hosted the 1989 World Alpine Ski Championships, proving that Colorado had the right stuff. The races garnered global media coverage and put Vail and Beaver Creek on the map as an international ski destination.

In 1999, he invited Dr. Steadman to move to Vail to establish a new home for the Steadman-Hawkins Research Foundation and to launch the world-renowned Steadman-Hawkins Clinic.

In 1999, *Ski* magazine voted George as one of the “100 Most Influential Skiers of All Time.” George Gillett’s innovative thinking and passion for redefining the ski industry have left a lasting mark on Colorado’s skiing community.

Congratulations are also due to Board member **Earl G. Graves, Sr.**, publisher, *Black Enterprise*, who was cited in *Fortune* magazine’s August 22 annual Diversity 2005 issue “People with the Most Clout” list. “After 35 years and three businesses, the legendary Graves remains one of the most influential businessmen in the country.”



Education

Welcome 2005-06 Fellows Six New Physicians Introduced

The crisp clear air and the changing aspens in the Vail Valley signal a busy time of year for the Steadman-Hawkins Fellowship Program. The incoming Fellows and their families have become settled and acclimated to the rigorous academic and research environment provided by the Foundation.

Six new members of the incoming "class" of Steadman-Hawkins Fellows have begun a busy schedule of refining skills as they make final preparations for a career as orthopaedic surgeons. Regarded as one of the most prominent and rigorous academic fellowship programs in orthopaedic sports medicine, six new orthopaedic surgeons are selected from a pool of more than 100 applicants.

Steadman-Hawkins Fellows spend their year refining skills and learning new surgical techniques and they have an opportunity to participate in research with Foundation scientists. Each Fellow will be actively involved in Clinical Research, Basic Science and Biomechanics, and Rehabilitation research.

The stream of knowledge and information flows both ways. The Fellows, having completed their formal training in leading orthopaedic programs, share knowledge they have gained from years of training with the physicians and scientists of the Foundation.

Mark S. Adickes, M.D.

Dr. Adickes attended Baylor University as an undergraduate student of business and then earned his medical degree at Harvard Medical School. He performed his orthopaedic surgery residency at the Mayo Clinic in Rochester, Minn. Dr. Adickes' career in medicine follows a remarkable decade-long career in the National Football League, during which he was a member of the 1991 Super Bowl Championship Washington Redskins Team. He also has extensive volunteer experience with inner-city students, terminally ill children and the Special Olympics.

Dominic S. Carreira, M.D.

Dr. Carreira earned his undergraduate degree in psychology at the University of Notre Dame and proceeded to the University

of Illinois at Chicago to receive his degree in medicine, where he was named to the Alpha Omega Alpha Medical Honor Society. He completed his residency at Rush University Medical Center. Dr. Carreira has been involved in numerous sports medicine research projects, most notably his study of arthroscopic Bankart repairs, and he has published articles in *The Orthopaedic Clinics of North America* and *Orthopedics*.

Alexander Martin Clark, M.D.

Dr. Clark graduated cum laude from Harvard with a degree in biology and earned his medical degree from Columbia University. He performed his orthopaedic surgery residency at New York - Presbyterian Hospital, where he was named the Arnold P. Gold Resident of the Year. A former professional squash player and four-time U.S. National Champion, Dr. Clark has a keen interest in the clinical research of injuries sustained by amateur and professional squash players.

Stephen A. Hunt, M.D.

Dr. Hunt studied history as an undergraduate at Yale University, where he captained the varsity lacrosse team and received the Donald J. Reape Lacrosse Award in his junior and senior years. He received his medical degree from New York University and was a member of the Alpha Omega Alpha Medical Honor Society. He then completed his residency at New York University's Hospital for Joint Diseases. Dr. Hunt has been published numerous times in such journals

as *Arthroscopy*, *Journal of the American Academy of Orthopaedic Surgeons*, *Journal of Trauma*, and *Foot & Ankle International*.

Todd L. Johnston, M.D.

Dr. Johnston graduated magna cum laude from the University of Notre Dame with a double major in science pre-professional studies and Japanese, and he also received the Knute Rockne Scholar Athlete Award for outstanding achievement in academics and athletics. He went on to study medicine at the University of Iowa, where he completed an orthopaedic and medical elective in Japan. Dr. Johnston performed his orthopaedic residency at Northwestern University, and his research experience includes radiographic evaluations of cervical pedicles, as well as studying the biomechanical comparison of multi-axial cervical pedicle screws.

William Scott Kimmerly, M.D.

Dr. Kimmerly received his undergraduate degree in political science from the University of North Carolina at Chapel Hill, and he attended medical school at the University of Tennessee at Memphis. His orthopaedic surgery residency was completed at Emory University, where Dr. Kimmerly assisted with team coverage for the Georgia Tech and Emory collegiate teams. His research experience includes analysis of arthroscopic repair of rotator cuff tears, diagnosis and management of medial tibial stress syndrome, and arthroscopic shoulder stabilization procedures.



Dr. Adickes examines a patient.



Thank you

A special “thank you” to our sponsors who make the Fellowship Program possible. We’d like to recognize those individuals and foundations that support the entire Fellowship class through the sponsorship of Academic Chairs.

Chair sponsors of the 2005/2006 Steadman-Hawkins Fellowship class are **Mr. and Mrs. Harold Anderson, Mr. and Mrs. Lawrence Flinn, Mr. and Mrs. John W. Jordan, Mr. and Mrs. Peter Kellogg, Mr. and Mrs. Al Perkins, and Mr. and Mrs. Steven Read.**

Fellowship Benefactors fund the research of one Fellow for one year. Each benefactor is assigned a Fellow, who provides written reports and updates of his or her work. We extend our gratitude to the following individuals for their generous support: **Mr. Milledge Hart, the Fred and Elli Iselin Foundation, Mr. and Mrs. John W. Jordan, Mr. and Mrs. S. Robert Levine, Mr. and Mrs. Kent Logan, Mr. Tim McAdam, Mr. and Mrs. Jay Precourt, and Mr. and Mrs. Stewart Turley.**

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Where Are They Now?

Steadman-Hawkins 2005-2006 Fellows Establish New Careers in Orthopaedics.

Kevin Crawford, M.D., moved back to Lubbock, Texas, to practice with Lubbock Sports Medicine.

Jason Drago, M.D., has joined Stanford University Medical Center’s Department of Orthopaedic Surgery as an Assistant Professor of Sports Medicine in Palo Alto, Calif.

Matt Dumigan, M.D., joined a former Fellow, Mike Zafuta, M.D., in Pittsburg, Kan., at New Century Sports Medicine.

Sonny Gill, M.D., moved to Arnold, Md., to begin his practice with Bay Orthopaedics.

Al Stubbs, M.D., stayed on to do a six-month hip fellowship with Marc J. Philippon, M.D.

Austin Yeargan, M.D., moved to San Luis Obispo, Calif., to establish a new practice.

Steadman♦HawkinsResearch Foundation Hosts Third Vail Cartilage Symposium

By Greta Campanale, Education Coordinator

On August 4-6, 2005, the professionals and staff of the Steadman♦Hawkins Research Foundation hosted the Third Vail Cartilage Symposium at the Lodge at Vail. The two-day meeting, funded by educational grants from Pfizer, Inc.; Genzyme Biosurgery; Innovation Sports, Inc.; and GlaxoSmithKline, featured a world-renowned, international faculty of orthopaedic surgeons, each of whom has pioneered innovative procedures for treating articular cartilage injuries.

Co-chairs of the event were Dr. J. Richard Steadman, founder of the Steadman♦Hawkins Research Foundation and principal of the Vail-based Steadman-Hawkins Clinic, and Dr. Martin Boublik, principal of the Steadman-Hawkins Denver Clinic. The two-day meeting for practicing orthopaedic surgeons included didactic sessions, presenter discussions, and a bioskills procedural laboratory.

The symposium was funded primarily by an educational grant from Pfizer, Inc., a \$52.5 billion, global, research-based company, with a long-standing commitment to health education. Additional grants were provided by Genzyme Biosurgery; Innovation Sports, Inc.; and GlaxoSmithKline.

With growing worldwide interest and concern over the increase in degenerative arthritis, this seminar is timely and relevant to both the orthopaedic world and lay community.

An online webcast and DVD of the Third Vail Cartilage Symposium is available to physicians worldwide to access upon request and is free of charge, therefore broadening the potential audience and making this unique educational program available to many who otherwise would not be able to participate.

For further information on the Vail Cartilage Symposium, please visit www.vailcartilage.com. To request the conference program, please contact Greta Campanale, educational program coordinator for the Steadman♦Hawkins Research Foundation, at (970) 479-5782.

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German physicians enjoy outdoors during their visit to Vail.

German Orthopaedic Surgeons Visit, Sponsored by ORMED GmbH & Co. KG June 13-15, 2005

By Greta Campanale, Education Coordinator

Twelve orthopaedic surgeons from Germany visited the Steadman♦Hawkins Research Foundation for three days in June 2005. Sponsored by ORMED GmbH & Co. KG, the European visitors observed three live surgeries performed by surgeons of the Steadman-Hawkins Clinic: a high tibial osteotomy procedure performed by Dr. William Sterett, a knee arthroscopy performed by Dr. Richard Steadman, and a hip arthroscopy performed by Dr. Marc Philippon. In addition, the group heard lecture presentations given by members of the Steadman-Hawkins Clinic, the Steadman♦Hawkins Research Foundation, and Howard Head Sports Medicine Center. The presentations focused on Steadman-Hawkins’ treatment approaches to lower and upper extremity sports medicine injuries and degenerative joint disease.

Founded in 1992, Ormed has three subsidiaries and 65 distribution centers throughout Germany. The company is a market leader in Germany for continuous-passive-motion devices.

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*(Philip Elder: Foundation Hall of Fame Candidate?
continued from page 1)*

“As I read the *Steadman-Hawkins Research Foundation Newsletter*,” explains Elder, “I could not help but think about who should be telling the real story of the incredibly unique Steadman-Hawkins experience. Doesn’t at least part of it need to come from someone ordinary like me, who was never an Olympic medal winner or a professional athlete or a celebrity interviewed by CNN? I’m just a dad who loves his kids, is very active, and wants to stay that way — whatever it takes.” What it took for Elder was a joint-preservation procedure made possible by years of research, practice, and data collection, all funded and supported by the Foundation.

Philip Elder was exactly the kind of advocate the Steadman-Hawkins Research Foundation has been looking for. Dr. Richard Steadman, speaking for the Foundation, has often said he would like to be known as the doctor who kept millions of weekend warriors out on the links or on the slopes late into life rather than one who salvages the career of famous athletes. Close enough. Elder, though not as famous as other recipients of the research carried on by the Foundation, is more than a weekend warrior, more likely to be riding a horse at top speed than riding in a golf cart, and at 54, not exactly “late into life.”

Elder’s Story

“I’m originally from Chattanooga and graduated from the University of the South in Sewanee, Tenn. I played football for five seasons and wrestled for four years,” he begins. (You’ll have to get an explanation from Elder about how he managed to play five years of college football.) Sewanee is also where he met his wife of 28 years, Becky. “I first hurt my knee wrestling, then suffered some more damage playing football. I could play, but because of the swelling it had to be drained weekly. Finally, I elected to have the damaged cartilage removed. I was actually better and faster the year after the operation.”

After graduating, Elder spent a year in New Zealand, where he worked and played club rugby before moving to Australia for another year. Still looking for Hall of Fame credentials? “I was the first American to get a visa extension from the government of New

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I could not help but think about who should be telling the real story of the incredibly unique Steadman-Hawkins experience. Doesn’t at least part of it need to come from someone ordinary like me, who was never an Olympic medal winner or a professional athlete or a celebrity interviewed by CNN?
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Zealand for the sole purpose of playing rugby. That’ll have to do.”

Fast-forward to 1977, when Elder joined the Love Box Company, an international corporation based in Wichita, Kan., that manufactures corrugated packaging products. Now Elder is the Chief Operating Officer and Vice President of the company, which has 1,500 employees, 14 locations, and clients that include Rubbermaid, Coleman, and Anchor-Hocking.

“The knee was okay until about the mid-1980s,” he remembers. “But then I started noticing twinges of pain in my bad knee and it started bowing outward. At the same time, our five children were getting involved in sports and other activities, but we were never home together at night. We were already involved in farming and ranching, so we decided to participate as a family in competitive horseback riding.” The Elders hit the road, traveling throughout the Midwest and competing in events such as speed barrels, flag racing, pole bending, and western jumping. The Elders are still out there competing today. “Basically, you’ve got your legs wrapped around a 1,200-pound horse that is running at full speed when it’s not turning, twisting, or changing directions.

“Gradually, my knee developed severe arthritis, and it was getting harder and harder to ride,” he says. “I couldn’t sleep and I was downing Tylenol like it was candy. I talked to some of the best orthopaedic surgeons in the country about unique solutions, but didn’t like what I was hearing. Most of them recommended total knee replacement. That’s when a friend told me about Steadman-Hawkins. I called and they immediately asked me when I could get to Vail. I was amazed. The atmosphere was completely different from that in other high-profile treatment facilities. The

doctors at Steadman-Hawkins let you talk. They ask questions. They want to know what you do and what your expectations are. They’re not in a hurry. They don’t look at their watches or seem anxious to get to the next appointment. I told them that I wanted to climb mountains with my children and that I was hoping they could help me walk. They made no pronouncements until they had listened and gathered as much evidence as they could about my specific condition. Their suggestions were made in detail and I was able to make an intelligent decision on the spot.”

In November of 1998, Dr. William I. Sterett performed microfracture, which triggers a cartilage resurfacing process, and a high tibial osteotomy, which helps to realign the knee to relieve pressure on the arthritic part of the joint, transferring it from the inside to the outside. “In eight weeks I was able to bear weight on the knee, I was on a horse in 12 weeks, and competing at full speed in 16 weeks. I was able to rejoin my family in competitive horseback riding and felt nearly unrestrained in most of my other activities. I don’t run, but I can ride a bike and ride a horse.” Elder says he’s been “as good as gold” since the operation in 1998. “I’ve gotten seven years out of it and could get another five or six,” he thinks.

The Foundation Connection

Elder was becoming increasingly aware that the research and education conducted by the Steadman-Hawkins Research Foundation had made his entire experience at the clinic possible. “The Foundation enabled the staff to do the research and gain the knowledge to deal with problems like mine. I didn’t know it at the time, but the Foundation has established one of the largest databases in the world on the type of condition I had, as well as many others, and that information is shared with other physicians. It’s the most unselfish thing I can think of.

“I highly recommend that anyone who reads this article consider supporting the Foundation,” Elder concludes. “I feel that I have a duty to help perpetuate its work. The payoff is incredible. The money the Foundation receives is used in direct, meaningful, and relevant ways. The research will result in a better quality of life for generations to come.”

And remember, you’re getting this information from Philip Elder — a potential Steadman-Hawkins Research Foundation Hall of Famer.





Photo: John Kelly



Photo: John Kelly

(Winter Outdoor Fitness continued from page 1)

to your exercise program. The snow of winter provides opportunities for activities such as cross-country and downhill skiing, snowboarding, skating, and snowshoeing.

Tips for Winter Outdoor Exercise

◆ **Dress appropriately.** This means using layers of clothing. The initial layer closest to the skin should be a material that pulls sweat away from the body. A synthetic material works best for this. Mid-layers should return heat between your body and the outside layer. In cold weather your body will sweat more and burn more calories as it works to stay warm and your

activity increases. Stay dry to avoid getting chilled. Your body temperature will decrease at a faster rate if you are *wet and cold* versus just being cold. The outer layer should be a waterproof layer, even on a dry day, in case of weather changes. Avoid cotton clothing, as it tends to retain moisture. Always remember to wear gloves and a hat. Fifty percent of the body's heat is lost through the head. The fingers and toes are the first to be affected as the body shunts blood away from your arms and legs in an effort to maintain its core temperature in cold conditions.

- ◆ **Block the rays.** Wearing high SPF sunscreen on exposed areas is advisable because ultraviolet rays are reflected off snow and ice. Wearing ski goggles or sunglasses, preferably resistant to UVA and UVB rays, will help protect your eyes.
- ◆ **Stay hydrated and nourished.** Your body needs plenty of water in the winter, although you may not feel as thirsty as you would during warm-weather months. Thirst is a sign that you may *already* be dehydrated. Bring plenty of water and a snack. Eating properly before and during activity will not only provide the energy for your adventure but also stimulates your metabolism, helping to maintain body temperature.
- ◆ **Warm up.** As with all exercise activities, it is important to warm up properly to help avoid injury. This is especially true if you are exercising in the cold. A proper warm-up would include a 5- to 10 minute brisk walk/jog followed by select stretches for both the upper and lower extremities. Consult a physical therapist, physician, or trainer for appropriate stretches.

Two good activities for fun outdoor winter exercise are snowshoeing and cross-country skiing. Downhill skiing, snowboarding, and skating can also be fun winter alternatives to improve coordination and strength. However, keep in mind that these activities need to be performed at a higher level or for a longer duration to get cardiovascular benefits.

Snowshoeing

As the saying goes, if you can walk, you can snowshoe. Snowshoeing began as a mode of winter transportation and has evolved into a form of exercise and sport. It is a relatively

safe activity with minimal risk of injury. The snow provides a soft surface that is easy on the joints of the lower extremities and the spine. It provides a great cardiovascular workout with heart rate increases relative to the amount of work done. Snowshoeing can burn up to 45 percent more calories than walking or running at the same speed, as it requires more coordination and effort. At a steady speed a person will usually burn 400-500 calories per hour, depending on body weight, level of intensity, slope of terrain, and snow conditions.

Besides the proper clothing, the only equipment needed is snowshoes. Poles may be helpful to improve balance and coordination but are not essential. A new pair of snowshoes costs around \$100, or they can be rented. They are available in different styles and sizes for different purposes, ranging from mountaineering to aerobic/fitness. Consult an experienced snowshoe retailer to help you make the right choice.

Cross-Country/Nordic Skiing

Another low-impact winter activity is cross-country skiing. It uses almost every major muscle group in the body, making it one of the best cardiovascular activities advocated by medical professionals. If performed at a steady pace, a skier can burn 650-800 calories per hour (again, depending on body weight and level of intensity). For example, a 175-pound man will burn 800 calories per hour skiing at a moderate pace. Additionally, it promotes flexibility and coordination while using natural movements. For those trying to augment a conditioning program for running, biking, or other endurance activities, cross-country skiing is an ideal cross-training activity.

Cross-country skiing is easy to learn and has a low injury rate. The natural motion of cross-country skiing makes it possible for people of all age and fitness levels to participate. An initial lesson is recommended to learn the technique. The average cost of a 90-minute lesson is \$15, and a package deal, including ski rentals, a trail pass, and a lesson, averages \$35. If you want to purchase equipment, a new set-up will range from \$200 to \$300. There are more than 500 cross-country areas in the United States and

continued on page 10

(Winter Outdoor Fitness continued from page 9)

Canada with groomed trails. Once you have mastered the basic techniques and gained experience in the snow, you can progress to off-track cross-country skiing, or “touring.” Snow conditions and weather can be a factor and must be respected. A guide or other experienced skier who is knowledgeable in weather patterns and hazardous winter conditions would serve as good company on your first outing.

Remember, to make gains in your cardiovascular health and to tone muscles, you should exercise consistently for 20-30 minutes per session at least three or four days per week. Check with your doctor before starting any new exercise program. With any winter outdoor exercise, be sure to start easy, take lots of breaks, and enjoy the scenery. Whatever your activity preference is, be sure to exercise this winter!



(Biomechanics Research continued from page 1)

Unfortunately, musculoskeletal joints are also well hidden under muscle and skin. Thus, no matter how much experience an orthopaedic surgeon has, the physician has no idea of how the joint functions during dynamic activity. Without this knowledge, there is no sure way to plan an operation or reliably predict its success. Until now, surgeons have relied heavily on X-rays or magnetic resonance imaging (MRI) and computed tomography (CT) to see inside the body. But these scans are only a motionless snapshot of the joint, and the surgeon must sift through 20-40 pictures to find the specific two or three that show the injury of interest. Consider this workload when a surgeon typically sees 30-40 patients per day (this equates to 600-1600+ scans the surgeon must intensively study in order to find each specific injury).

In a healthy joint, this endeavor is like searching for a needle in a haystack. In a severely injured joint, this is similar to searching for a needle in a stack of needles. Thus, being able to quickly and reliably view the complete anatomy of a joint in three dimensions, as well as to see how that specific

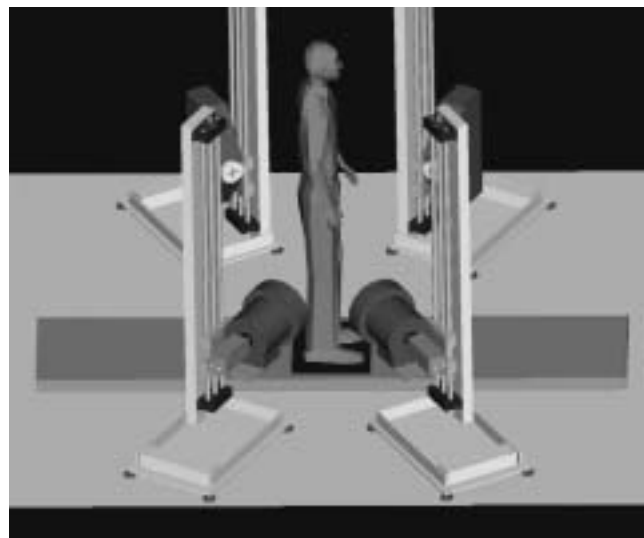
joint's different components interact with each other during activity, would be of immense value to doctors and therapists. The power of this unprecedented view of a joint would eliminate the guesswork in devising and adapting therapies to suit an injured or disease-affected joint.

Mapping the Geometry of a Joint — Creating Patient-Specific Models from Diagnostic Images

With the problem understood, the Foundation's Biomechanics Research Laboratory took up the monumental task of successfully creating technology to accurately represent the knees and shoulders of patients in three dimensions. Utilizing MRI and CT scans, these images are converted into thousands of mathematical equations — the basic language understood by computers. These one-of-a-kind virtual models of the knee and shoulder joints allow the researchers to see and manipulate the tissues in 3D. The models also allow basic research to determine how these tissues are stressed during activities of daily living or how people injure themselves during athletic events, as well as predict the outcomes of different surgeries and therapies. Direct access to such detailed information about their own bodies immensely aids patients and their physicians in choosing the premier healing protocol for that situation.

3D Models in Motion

Creating a stationary, 3D model to allow clinicians to see inside of the joint is only half the problem. A model must be able to behave like the real joint because motion reveals pathology. It is motion that typically causes pain and exacerbates further damage to a joint. Thus, it is not only the geometry of the joint but also a combination of the 3D geometry and the 3D motion that really complicates the understanding of how knee and shoulder joints function. Moreover, every person's joints move a little differently from others



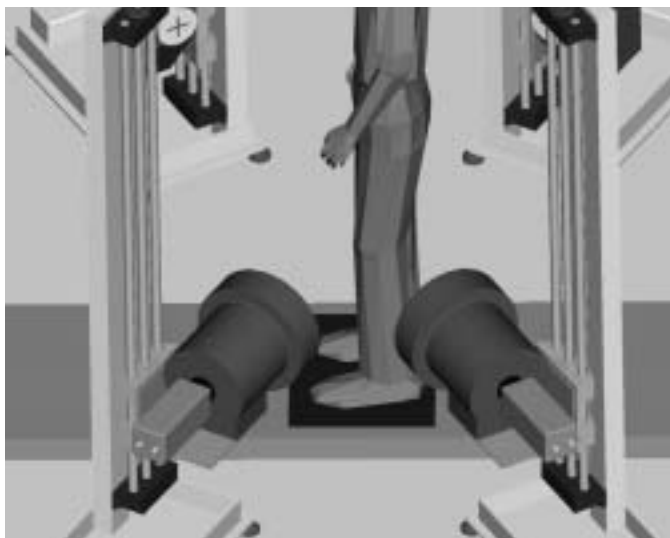
Full view of the dual Fluoroscopy System Set-Up: This innovative system is designed to measure motions of the bones in the body. Here the system is poised to measure motion of the knee during walking. This system has the ability to track the motion of the knee bones at an accuracy of .2 mm or less. This highly accurate method of motion capture will allow the Biomechanics researchers to determine loads of knee ligaments and even the cartilage in the knee during activities of daily living such as walking and stair climbing.

and these motions can be very subtle but meaningful in understanding damaging loads to structures such as cartilage.

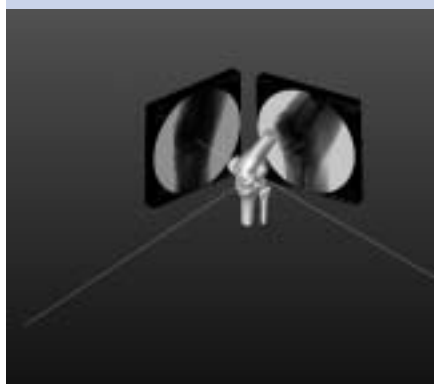
These complexities compound the surgical options as well as the potential for error when physicians must decide on a course of surgery and rehabilitation that would best suit their patients. The Foundation's Biomechanics Research Laboratory has embarked on a novel method of measuring the exact motion of these joints to accuracy levels of .14 mm or less. The core of this research initiative is *Dual Plane Fluoroscopy*. This technology is based on integrating dynamic fluoroscopy (X-ray), stereoscopic vision, and MRI and CT to allow true 3D motion to be obtained from patients as they move about the laboratory. Once completed, this initiative will provide an advanced, accurate, and comprehensive description of motion in the shoulder and knee that has not been achieved previously.

Seeing Inside While Staying Outside

The Steadman-Hawkins Research Foundation's Biomechanics Research Laboratory and other researchers around the world are pioneering the highly promising field of patient-specific computer simulation. Combining a 3D model of the patient's joint via MRI and CT with highly accurate human motion analysis via dual plane fluoroscopy



Close-up view of dual fluoroscopy system: The two large cylinders emit X-ray beams that the subjects walk through. The beams pass through the skin and muscle to project a view of the bones of the knee that is captured on the smaller plates (marked with an "x" in the background).



The two X-ray projections are combined with a 3D model of the knee and together they are used to recreate the measured motion of the knee in the computer.

will allow physicians, therapists, and researchers the freedom to simulate different healing and correction protocols on the injured, malaligned, or diseased joint. Then they can select the optimum surgical and rehabilitative procedures without even touching the patient. We are pushing the advances in this technology already made by the Foundation into a new realm. The ultimate scenario will be for a physician to bring a 3D model of his or her patient's injured or damaged joint into virtual reality on a desktop computer, perform different surgical procedures, and immediately view the results on that particular joint's motion and ability to handle loads and forces.

Evolution of the Idea

Where did these ideas originate, why is this advancement in technology required, and how will it help patients? The Biomechanics Research Laboratory has excelled over the past four years, winning five international and national research awards in acknowledgment of its pioneering work in orthopaedic research. Conducting quality research is never easy, but to remain at the cutting edge we must persistently develop new

technology to best meet the needs of the orthopaedic surgeon and ultimately the patient.

The research described above constitutes a major turning point in our research agenda. In the last four years, we have successfully accomplished all our five-year goals (2000-2005). For the next five-year plan, the Biomechanics group is proposing an ambitious, innovative research initiative that will keep its work at the forefront of orthopaedic technology. Titled *A Step Into the Future*, the Biomechanics Research Laboratory proposes the development of a 3D Dynamic Motion Imaging System to investigate human motion at a level of detail and scrutiny that has not been possible until recently.

The evolution of this initiative began with over 15 years of research and fully understanding the limitations of current technology, as well as recognizing the need for advancements from within the medical and bioengineering communities. Nearly everyone reading this article has experienced a trip to the orthopaedic surgeon's office. This trip is most often associated with an additional trip to the MRI station and/or the X-ray station so the doctors can get a "snapshot view" of what is inside the joint. While taking the MRI or X-ray scan, the imaging technician tells us to remain perfectly still so as not to blur the images. This non-motion view is a major problem as most often the pain a patient feels

in a joint actually occurs while he is moving, not lying still as was imaged by the MRI or X-ray.

So the fundamental basis for this new research initiative is quite simple — to combine the MRI and X-ray data with the patient's motion and report the movements of the joint while it is actually moving. In this research initiative, we are creating a set of 3D dynamic motion images that can be viewed from any perspective while the joint is moving. The potential for this information in its practical application to orthopaedic surgery is limitless. We will start with simple motion such as walking, hence the title *A Step Into the Future*, and then progress into more dynamic motions. This project offers a unique opportunity to investigate numerous research questions that are persistently plaguing the orthopaedic practice.

The Altruistic Application

Presently, a telemedicine software program to simulate surgery in remote parts of the world is not available. This technological advancement could predict the results of surgery in areas where experience in treating orthopaedic conditions and the required research to support such surgeries are not available.

Many developing countries lack the training to treat orthopaedic problems with the same degree of success that we have experienced in the United States. This technology, if developed and cultivated properly, has the potential to improve orthopaedic surgery and offer that same degree of success. Imagine experienced physicians such as Drs. Steadman, Hawkins, Sterett, Corenman, Viola, Karli, ElAttrache, Millett, and Hackett, as well as others, being able to remotely train a young surgeon in Uganda, Cuba, or Russia on how to best treat an injury that has recently occurred to one of their elite soccer players, gymnasts, or triathletes. The educational potential as well as applied medical benefits for this project are limitless. And if you have had the opportunity to meet the Steadman♦Hawkins Research Foundation's Biomechanics Research staff, you know that they set no limits and boundaries to the potential of their work in helping people through research and education.



Hip Arthroscopy

By: Marc J. Philippon, M.D. Dr. Philippon is an orthopaedic surgeon at the Steadman-Hawkins Clinic who specializes in treating hip injuries.

Over the past several years the role of hip arthroscopy in the management of athletic hip injuries has evolved due to significant improvements in surgical technique and instrumentation. Many similarities exist between the hip and shoulder. Both are ball and socket joints that allow the athlete a wide range of motion. The ball is the head of the femur that sits deep within the socket. The socket is the acetabulum, which is a part of the pelvis. The hip labrum is similar to the meniscus of the knee and it runs around the rim of the acetabulum. The labrum adds stability to the joint and provides cushioning. Injuries to the labrum are the most consistent

findings identified at the time of hip arthroscopy. Patients with labral tears often seek medical attention after a traumatic injury or following lingering hip pain that was diagnosed as a groin pull, muscle strain, or hernia. Both can co-exist creating a confusing picture. Patients with clinical and, sometimes, imaging findings consistent with a labral tear may be candidates for hip arthroscopy.

The labrum is densely innervated with pain fibers. The goal of surgery is to reduce pain by eliminating the unstable flap of the labral tear that is causing discomfort. This is accomplished by debridement of the torn tissue, leaving as much healthy tissue as possible. When the labrum is detached from the acetabulum, it often can be repaired using an anchor and suture to repair the tear. Excellent results with patients having improvement in symptoms and athletes

returning to their previous level of sport are expected.

Labral tears can also be associated with rotational instability of the hip and impingement in the hip. Instability can occur when the labrum is torn, which can result in a loss of suction. Arthroscopic management of these injuries may include labral repair and techniques to reduce the volume of the hip capsule. These techniques include thermal capsulorrhaphy and capsular plications. In elite athletes we have seen a high return to pre-injury level following this treatment as well.

It is suspected that impingement in the hip may actually cause labral tears and chondral damage in the hip, which may ultimately result in arthritis. Two types of impingement have been described. Cam impingement results from contact between an abnormally shaped femoral head and neck with a normal acetabulum. Pincer impingement is caused by contact between an abnormal acetabular rim and typically a normal femoral head-neck. Arthroscopically, the impingement can be relieved by increasing hip clearance in flexion, as well as addressing the associated labral



Photo: John Kelly

and chondral pathology. Microfracture, similar to that used in the knee, has shown excellent success in treating the hip as well.

Our clinical observation has indicated that these commonly performed arthroscopic techniques are highly beneficial in both the professional and recreational athletes. Hip arthroscopy can be performed safely and effectively as an outpatient procedure. Many patients, who would have otherwise had to alter their lifestyle or suffer needlessly, can be helped with this procedure. Full recovery depends on the individual and ranges from 12 to 16 weeks depending on the procedure.



Older Knees Now Have New Option

By Vicky Lowry, *New York Times*

Editors Note: This article appeared in the April 5, 2005 edition of the *New York Times*, and is reprinted with permission.

For active people in their 30's and 40's who are starting to experience knee pain from years of running, skiing, or basketball, the sports pages may point to a solution. Microfracture surgery is commonly performed on the knees of professional athletes to regenerate cartilage eroded from overuse or sheared off from injury.

The treatment has prolonged the careers of many professionals, including Jason Kidd of the New Jersey Nets, who had the operation in July of 2004. But it is also gaining in popularity among people who do not earn a living in sports.

The surgery was pioneered by Dr. Richard Steadman of the Steadman-Hawkins Clinic in Vail, Colo., who estimates he has

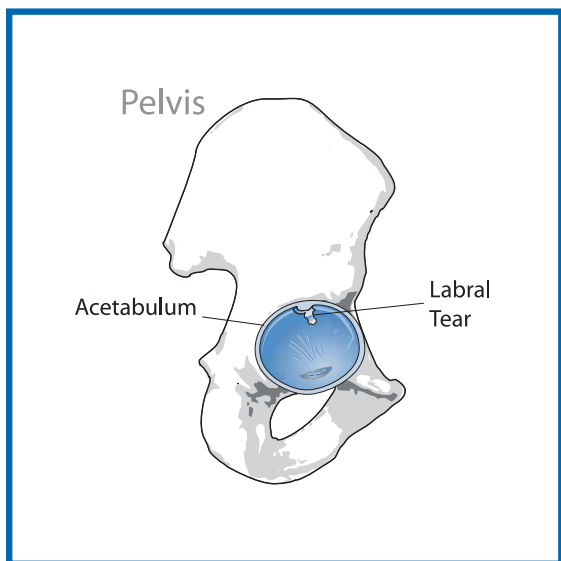


Illustration: Marty Bee

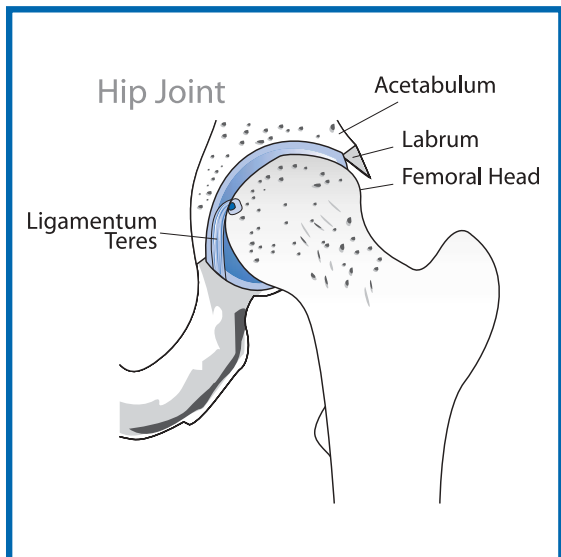


Illustration: Marty Bee



Photo: John Kelly

performed it 2,700 times since he developed it in the early 1990s.

The surgery is performed using an arthroscope and takes 20 to 35 minutes, said Dr. Kevin Plancher, an orthopaedic surgeon in Greenwich, Conn., who often performs the operation. First, the area of cartilage erosion — imagine a divot on an ice rink — is scraped with a curet to remove any calcified cartilage remnants that could interfere with the formation of new cartilage. “The cleaner the surface, the more potential there is for regrowth,” Dr. Steadman said.

Next, tiny holes, called microfractures, are punched into the bone with an awl resembling a small curved ice pick. These tiny perforations allow stem cells to escape from the marrow cavity, starting the formation and growth of repair tissue that is similar to the original cartilage.

A video of a microfracture surgery that also featured two follow-up observations illustrated the effects of the procedure. A month after the surgery, blood gathered in the area of the picks, and new cartilage had started to mature. Six months later, islands of new cartilage filled in the gaps.

Dr. William Rodkey, director of basic science research at the Steadman-Hawkins Research Foundation, said that patients were required to be on crutches up to eight weeks

and to spend at least six hours a day with a machine that moves the knee in a continuous passive motion. The tissue remains delicate during maturation, which takes at least a year.

“For reasons we don’t know, passive motion, which rocks your knee like a cradle, promotes healthy growth cells and promotes a more durable tissue,” said Dr. Nicholas DiNubile, an orthopaedic consultant for the Philadelphia 76ers and the Pennsylvania Ballet.

The longer recovery period compared with other arthroscopic knee procedures, which typically allow patients to walk out of the hospital without crutches, can pay off. A long-term evaluation of 72 cases, led by Dr. Steadman and published last year in the journal *Arthroscopy*, found that 80 percent of patients 45 and younger who had the microfracture procedure showed major improvement in function and experienced less pain. The benefits extended, on average, at least 11 years after surgery.

In 2003, a study of 25 pro football players treated with microfracture documented that 19 of them (76 percent) returned to play the season after surgery and continued to play for an average of 4.6 additional seasons.

Older knees, however, may not fare as well. “Patients over 65 may have more problems with the crutch-walking and the rehab,”

Dr. Rodkey said. “And, in general, one would expect younger patients to have more stem cells in their marrow, and, therefore, do better.”

Arthritic knees with major cartilage degeneration are not ideal candidates, either. “The threshold size of the defect seems to be around 2.5 centimeters,” said Dr. David Altchek of the Hospital for Special Surgery in Manhattan, who operated on Jason Kidd’s left knee.

“Defects larger than this have marginal response,” Dr. Altchek said, because if the surrounding cartilage is too worn down, it cannot contain the blood clot.

Many surgeons will not perform the procedure on people with markedly bowed legs or knock-knees, conditions that can put too much pressure on the area that has cartilage defect, so that new cartilage will probably just wear down again.

Being overweight is also an obstacle. “The fact is that obesity not only causes arthritis, but it makes it more likely to progress,” Dr. DiNubile said. “We have the technology to repair potholes on the joint surface, but we can’t repave the road.”

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Save the Date

The Beaver Creek Snowshoe Adventure Series, Presented by Pepsi

Now in its seventh year, this family-oriented snowshoe event attracts everyone from the first-time snowshoer to the world's premier snowshoe athletes. Foundation special events benefit the arthritis research and education programs of the Steadman♦Hawkins Research Foundation. In 2004, 32 states and four countries were represented in the series. The series is the largest of its kind in North America and will consist of four events throughout the 2005-06 winter season: Saturdays, December 10, 2005; January 7, 2006; February 11, 2006; and Sunday, March 5, 2006. The adventure series features 5- and 10-K races, walks and runs, slope-side sponsor expos, and post-event plaza parties.

The North American Snowshoe Championships, the final event in the Series, wraps up the season with the highest profile event in the sport.

Steadman-Hawkins Winter Winemaker Festival, Presented by WestStar Bank

The third annual *Steadman-Hawkins Winter Winemaker Festival, Presented by WestStar Bank*, Saturday, February 25, 2006, will bring together one of the world's finest vintners, Bill Harlan, and one of the world's great chefs, Thomas Salamunovich. Harlan, founder and owner of Harlan Estates, will present his wines. Guests will mingle with Harlan while renowned Larkspur chef



Salamunovich creates a special menu to complement the featured wines. In its first two years of existence, this high-end event has been oversubscribed and has attracted some of the world's finest wines and winemakers from Bordeaux, Napa, and Sonoma.

Foundation Celebrates Colorado Evening, Presented by WestStar Bank

A lifetime of excellence will be on display Saturday, August 19, 2006 in Vail, Colo., as the Steadman♦Hawkins Research Foundation hosts the "Colorado Evening," a culinary extravaganza. The *Colorado Evening, Presented by WestStar Bank* will feature superb cuisine, courtesy of some of the Vail Valley's finest restaurants; award-winning wines; and opportunities to bid on the dreams of a lifetime.

Steadman-Hawkins Sanctuary Golf Tournament Set for August 17, 2006

The Steadman♦Hawkins Research Foundation has been selected by RE/MAX International, a global real-estate firm, to hold the third *Steadman-Hawkins Golf Classic, Presented by REMAX International and Pepsi* at the Sanctuary, a premier golf resort located south of Denver near Sedalia. Proceeds from the tournament will support the development of new procedures and methodology to battle degenerative arthritis. The team event will include a shotgun start with a modified scramble. The tournament is open to the public and includes invitees from the Denver Broncos, local celebrities, and Colorado golf pros. Sanctuary organizes and hosts charitable events to support organiza-

tions devoted to the arts, children, health care, and crisis management. To date, more than 138 charities have raised more than 23 million dollars to benefit the constituents they serve.

The Steadman♦Hawkins Research Foundation is grateful to Dave and Gail Liniger, owners and co-founders of RE/MAX International, who created this unique opportunity for the Foundation to develop and enhance relationships with those who support our mission.

To request an invitation, or for more information on Foundation events, please contact Rachele Palmer at the Steadman♦Hawkins Research Foundation (970-479-5809).

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Steadman-Hawkins Attracting the Best

On October 1, 2005, Dr. Peter J. Millett, internationally recognized shoulder specialist, added his name to an impressive list of doctors at the Steadman-Hawkins Clinic. Dr. Millett brings unique capabilities in the area of complex shoulder problems. He comes from a successful Boston-based orthopaedic practice and a faculty appointment at Harvard Medical School. Dr. Millett will find opportunities to focus on sports injuries as a team physician for the U.S. Ski Team.

The newest Steadman-Hawkins physician trained at the nation's most prestigious residency orthopaedics program, Cornell University/ Hospital for Special Surgery. He



Peter J. Millett, M.D.

also did post-graduate research in skeletal biology at Cambridge University in England, then added fellowship training for his sub-specialty, sports medicine and shoulder surgery, at Steadman-Hawkins. Since completing his

extensive education, Dr. Millett has been recognized by the American Orthopaedic Association, the American Academy of Orthopaedic Surgeons, the German Shoulder and Elbow Society, the New England Orthopaedic Association, and the American Shoulder and Elbow Society.

When asked about cases that typify his work, Dr. Millett tells stories of everyday people — patients whose shoulder injuries weren't thwarting their play-off chances or halting their march to Olympic gold. In fact, life-changing procedures that help ordinary patients rank among his proudest achievements.

In his practice, Dr. Millett says he's often seen patients who sought his advice just when they must have felt like giving up.

At Steadman-Hawkins, Dr. Millett will join a team of shoulder specialists: Dr. Tom Hackett, Dr. Neal S. ElAttrache, and Dr. William I. Sterett, a partner at the Vail clinic. Dr. Millett calls the staff appointment to Steadman-Hawkins "a wonderful opportunity to join a world-class practice. Steadman-Hawkins provides the highest level patient care in a personalized environment."

That environment was created and nurtured by Dr. Richard Steadman, clinic founder, whose work has restored career potential to many professional athletes and outstanding amateur competitors over the years. Dr. Richard Hawkins, who formed a partnership with Dr. Steadman in 1990, now devotes most of his time to the Steadman-Hawkins Clinic of the Carolinas.

Innovative surgical techniques developed by these two world-renowned surgeons now serve a more extensive public through the Steadman-Hawkins Research Foundation, founded in 1988. The Foundation disseminates these techniques while encouraging further research and study in the field of orthopaedics. Since 1990, the non-profit foundation has applied \$30 million to research and education aimed at keeping professional athletes, weekend athletes, and the rest of us physically active for life.



Meet Our Staff

Amy Ruther

Human Resources, Accounting, Payroll, Office Coordinator



Amy Ruther joined the Steadman-Hawkins Research Foundation staff in July of 1998 and has worn many hats since. During the past seven and a half years, Amy has worked in Administration,

Clinical Research, and Education and Fellowship. Currently, her main focus is with Administration, Human Resources, Accounting, and managing the front office.

Amy, a Wisconsin native, graduated from the University of Wisconsin Stevens Point in 1990. She earned a B.S. degree in early childhood education, with a minor in sociology. In 1992, she and her husband, George, moved to Denver, Colo., and in 1994, they made Vail their home.

Amy's career began with teaching for a Head Start program and gradually moved to the business side of things after her move to Colorado. She spent five years working for the Vail Valley Medical Center before coming to the Steadman-Hawkins Research Foundation. "I'm happy the Foundation recruited me so many years ago. It is a wonderful organization with a great cause."

Amy and George never did trade in their "cheeseheads" when they moved to Colorado. They continue to be avid Packers fans while still finding time to enjoy hiking, snowshoeing, and traveling. They thoroughly enjoy calling the mountains of Colorado their "home away from home."



GOLFERS WANTED

Golf is one of the most popular sports in men and women over 50 years of age in the United States. Golf is also becoming more affordable and thus accessible to youth as well. However, golf requires excessive and repetitive motions that often cause injuries in youth and adult populations alike. Researchers at the Steadman-Hawkins Research Foundation are studying the golf swing in an attempt to understand how and why golfers experience these golfing injuries.

If you are a youth (age 12-17 years) or adult (age 18-80 years) professional or recreational golfer you can have your golf swing analyzed as a part of a golfing injury research program. Participation requires a single, one-hour visit to the Biomechanics Research Laboratory. Both male and female golfers are encouraged to participate. **If interested, call Dr. Erik Giphart at 970-479-5848.**



The Steadman♦Hawkins Research Foundation 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.

ADMINISTRATION

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Chief Executive Officer

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Chief Operations Officer

Amy Ruther
Human Resources Manager

Karyll Nelson
BioSkills Laboratory Director and Executive Assistant

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Vice President for Program Advancement

Rachele Palmer
Development Coordinator

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Director

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Director

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Research Associate

Lauren Methany
Research Associate

David Koppersmith
Research Intern

BIOMECHANICS RESEARCH LABORATORY

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Director of Biomechanics Research Laboratory

Kevin B. Shelburne, Ph.D.
Senior Staff Scientist/Assistant Director

J. Erik Giphart, Ph.D.
Staff Scientist/Motion Laboratory Director

Takashi Yanagawa, M.A.
Staff Scientist/Senior Programmer

Mara Schenker
Research Intern

EDUCATION

Greta Campanale
Director

Dina Proietti
Educational/Development Program Assistant

TECHNICAL RESOURCES

Jean Claude Moritz
Information Systems Manager

VISUAL SERVICES

Joe Kani
Coordinator

Mark Your Calendar

- December 10, 2005** *The Beaver Creek Snowshoe Adventure Series, Presented by Pepsi.* This family-oriented snowshoe event attracts everyone from the first-time snowshoer to the world's premier snowshoe athletes. The series will consist of four events throughout the 2005-06 winter season — Saturdays, December 10, 2005; January 7, 2006; February 11, 2006; and Sunday March 5, 2006.
- February 25, 2006** *Third Annual Winter Winemaker Festival, Presented by WestStar Bank* featuring the wines of Harlan Estate. For more information, contact Rachele Palmer at (970) 479-5809, rachele.palmer@shsmf.org
- August 19, 2006** *Steadman-Hawkins Colorado Evening, Presented by WestStar Bank.* Celebrate an evening of Vail Valley cuisine and the opportunity to bid on the dreams of a lifetime. For more information, contact Rachele Palmer at (970) 479-5809, rachele.palmer@shsmf.org
- August 17, 2006** *Steadman-Hawkins 2006 Golf Classic, Presented by RE/MAX International and Pepsi at Sanctuary in Sedalia, Colo.* For more information, contact Rachele Palmer at (970) 479-5809, rachele.palmer@shsmf.org

Your Legacy, Our Future.

Please remember Steadman♦Hawkins Research Foundation in your will, trust or other estate plan.



Steadman♦Hawkins
Research Foundation

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