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UPDATE

BIOLOGICS

FOR SPORTS
MEDICINE &
ORTHOPAEDIC
HEALING

TEAM PHYSICIAN Xs & Os:
Hamstring Strains

NEW OKU Sports
Medicine 5

Annual Meeting
Abstract
Submission



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Biologics for Sports Medicine and Orthopaedic Healing



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SPORTS MEDICINE UPDATE is a bimonthly publication of the American Orthopaedic Society for Sports Medicine (AOSSM). The American Orthopaedic Society for Sports Medicine—a world leader in sports medicine education, research, communication, and fellowship—is a national organization of orthopaedic sports medicine specialists, including national and international sports medicine leaders. AOSSM works closely with many other sports medicine specialists and clinicians, including family physicians, emergency physicians, pediatricians, athletic trainers, and physical therapists, to improve the identification, prevention, treatment, and rehabilitation of sports injuries.

This newsletter is also available on the Society's website at www.sportsmed.org.

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FROM THE PRESIDENT



As we head into the fall sports season, I want to draw your attention to a number of activities the Society is directly and indirectly involved with to support members who are team physicians. Sports medicine is a multi-disciplinary endeavor, and AOSSM is working with various organizations to help ensure that orthopaedic specialists have a meaningful voice.

The National Collegiate Athletic Association (NCAA) has taken significant steps in naming a Chief Medical Officer (CMO) to elevate the medical aspects of sport and to facilitate a deeper and broader dialogue on health issues. Brian Hainline, MD, the NCAA CMO, and John Parsons, PhD, ATC, Director of the NCAA Sports Science Institute, have established a strategic agenda on a wide variety of issues, including:

- Concussion
- Mental Health
- Cardiac Issues
- Overuse and Early Sport Specialization
- Doping and Recreational Drug Use
- Data Analytics and Informatics.

AOSSM has been represented in these initiatives and the Board has endorsed documents on:

- *Best Practices to Promote and Develop Student Athlete Mental Health*
- *Inter-Association Consensus Guidelines for the Cardiac Care of Student Athletes*
- *Inter-Association Consensus Guidelines on Independent Medical Care*
- *Inter-Association Consensus Guidelines on Year Round Practice Contact*
- *Inter-Association Consensus Guidelines on Concussion Diagnosis and Management*

In addition, the Society recently participated in two sport specific summits on soccer and wrestling.

The relationship is a two-way street and doesn't just entail the development of NCAA documents. Dr. Hainline will be one of the participants in AOSSM's Early Sport Specialization Workshop in October that will help develop a research and public education agenda on an issue that is very important to AOSSM members.

In addition, the NCAA was one of the catalysts behind the creation of Datalys Center, a not-for-profit organization that was established to focus on sports injury research and prevention and

which under its articles of incorporation designates AOSSM as a supported organization. Datalys' work with the NCAA, NATA, Pop Warner, Youth Lacrosse, National Center for Catastrophic Sports Injury Research, and many other organizations and is growing in prominence and rapidly adding to the literature on sports-related injuries. Some of their work has been published in both *AJSM* and *OJSM*. Many of the education resources developed by Datalys in turn reference back to AOSSM's STOP Sports Injuries program.

AOSSM also continues to work with many other organizations to provide important resources for the orthopaedic sports medicine specialist. Later this fall, the Society, ACSM, AMSSM, AAOS, AAFP, and AOASM will be releasing the *Selected Issues in Injury and Illness Prevention and the Team Physician: A Consensus Statement*. In addition, the Society is actively working with the NATA on updating its document *Appropriate Care of the Spine-Injured Athlete*. Contrary to some premature press on the subject, this document is still undergoing careful scrutiny and it is imperative that AOSSM continue to be a part of that process.

Aside from athletics, another rite of fall for the AOSSM president is to do a site visit for the next Annual Meeting. After having visited the Broadmoor in Colorado Springs, I could not think of a more beautiful and versatile setting for AOSSM's 2016 Annual Meeting. The resort harkens back to our early years in Sun Valley with the Rockies at our doorstep. The resort accommodations are luxurious and second-to-none, with a variety of family-friendly options. The meeting facility is perfect in many ways for a meeting of AOSSM's size. With Kurt Spindler, MD, as my program chair and the Broadmoor as our host, the 2016 Annual Meeting will be very special. Mark your calendars now for July 7–10, 2016!

Allen Anderson, MD



BIOLOGICS FOR SPORTS MEDICINE AND ORTHOPAEDIC HEALING

MICHAEL J. SMITH, MD



The promise of biologics for sports medicine and orthopaedic healing is exciting to not only the physician, but has brought much interest to the public and media as well. Biological augmentation is the science of using autologous stem cells and growth factors to enhance our own body's ability to heal. Tissue engineering is the addition of cells and growth factors to a human scaffold to improve tissue healing and regeneration. The sports medicine physician needs to understand the science and principles of these biological processes to be able to offer the best treatment options for patients. Numerous products are entering the market and there is little guidance as to the indications and cost effectiveness of these treatments.

PRP

PRP has been utilized since 1950.^{1,2} PRP is autologous blood with concentration of platelets above baseline value.³ There are several products on the market. PRP is produced by a centrifugation process of an initial soft spin of 1,200 to 1,500 rpms where the plasma and platelets are separated from the blood cells and white cells. A second hard spin is done at 4,000 to 7,000 rpms. This further separates the platelet rich and platelet poor plasma components. The second phase concentration is controversial since some commercial formulations do not use this portion of the process.

The basic science of PRP is that the platelets release numerous growth factors and bioactive proteins on activation. PRP attracts mesenchymal stem cells, macrophages, and fibroblasts. PRP stimulates cell proliferation and extracellular matrix protein production.

PRP has more than 1,100 different proteins, including PDGF platelet derived growth factor; TGF-Beta transforming growth factor; IGF insulin-like growth factor; FGF fibroblast growth factor; and VEGF, vascular endothelial growth factor. There are studies that show positive results from proteins such as insulin-like growth factor 1, vascular endothelial growth factor, and basic fibroblast growth factor.⁴ Other studies have shown deleterious effects with proteins such as transforming growth factor (TGF) having negative effects.⁵

PRP can be classified as leukocyte poor PRP (LP-PRP) versus leukocyte rich PRP (LR-PRP). Leukocytes are white blood cells and they play a key role in initial phases of inflammation but they also increase muscle damage and may impede healing through a release of various enzymes. White blood cells in PRP joint injections may hamper results. Although we don't know the exact reason, it could be due to inflammation. Red blood cells are not tolerated in a joint and are known to cause cartilage damage such as occurs in hemophilia and trauma. This leads to the question of the clinical response of micro fracture producing red blood cells even though the purpose is to promote stem cells into the area for some cartilage growth. Braun et al. showed that cultured synoviocytes leukocyte-rich PRP causes cell death.⁶

The joint is a complex and constantly changing environment. All of the structures in the joint must be considered when performing intra-articular injections. With the available data present, it is apparent that WBCs with PRP are not advantageous, probably due to an inflammatory response. RBCs are not tolerated well, as known in trauma and hemophilic arthropathy and therefore should not be used with intra-articular PRP injections. The effect of PRP on the synovium and synoviocytes is still not well studied.

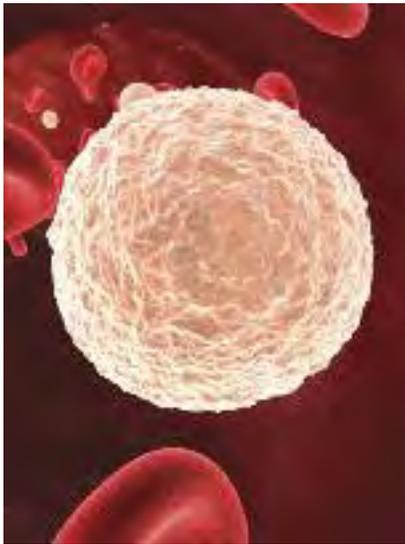
There are more than 40 commercial systems available, but many factors

contribute to the content of PRP. The final platelet and growth factor concentrations depend on the amount of whole blood used, the efficacy of platelet recovery, and the final volume of plasma in which the platelets are suspended. Castillo has shown more than a 50 percent variation in platelet concentration even with the same technique.⁷ Mazzocca showed that

PRP has been used in chronic tendonopathy, especially elbow epicondylitis.

there was a difference in PRP according to the preparation method and human variability.⁸ He showed that the platelet concentrations for all of the PRP was greater than whole blood, but there was no superiority over single versus double spin, and even in the same system there was a high variability and a high variability with intra-individual measurements.

Having higher concentrations of platelets within PRP does not necessarily lead to a more pronounced positive effect. Giusti suggested that the most effective platelet concentration for tissue healing was 1.5×10^6 per microliter.⁹ Though the response curve was not linear, there



was even a saturation effect in which an inhibitory effect was noted once a high concentration of platelets reached. He also noted that platelets exhibited the greatest influence on healing immediately after the inflammatory phase of the injuries, and this may mean that the timing of administration of PRP may be important.

PRP has been used clinically for tendinopathy, soft tissue injuries, arthritis, surgical repair enhancement, and bone healing. An excellent review article by Hsu can be found in the *Journal of American Academy of Orthopaedic Surgeons*.¹⁰

PRP and Bone Healing

The effect of PRP on bone healing has been studied. There are osteogenic properties of PRP in vitro^{11,12} but there is limited clinical evidence demonstrating any beneficial effects. It has been used in spine fusion trials but there is no evidence that PRP is helpful in these cases.^{13,14} Current evidence indicates that PRP is not effective either alone or as an adjunct to a local bone graft.

PRP and Tendonopathy

PRP has been used in chronic tendonopathy, especially elbow epicondylitis. A study by Peerbooms compared injection of PRP with corticosteroids for a lateral epicondylitis.¹⁵ Comparison of the outcomes at one and two-year follow-ups

show that the clinical improvements in corticosteroid groups tend to decline, whereas the improvements in PRP groups were maintained. Studies suggest that PRP formulations containing WBCs improved patient's outcomes, compared to either a local injection of anesthetic or corticosteroid usage. This points to the fact that WBCs may be advantageous in PRP use in tendonopathy.

Studies on Achilles tendinitis and patellar tendinitis or jumper's knees have not been as successful with no difference in clinical outcomes on several studies.^{16,17,18}

PRP and ACL Reconstruction

ACL reconstruction studies have shown possible increased faster graft maturation of the ACL when studied with MRI.¹⁹ However, no difference in clinical outcomes has been reported. It should be noted that the clinical outcomes' variability can be attributed to many factors, including PRP preparation, graft choice, rehabilitation, and application techniques.

PRP and Rotator Cuff and Achilles Tendon Repairs

Rotator cuff repair use of PRP has mixed data and results. Although there are some studies showing possible benefit,²⁰ there is no convincing data that shows better clinical outcomes or decreased re-tear rates.²¹

Using PRP as part of the treatment of Achilles tendon ruptures has had variable results. One study shows Achilles tendon repair with PRP having a faster recovery of range of motion and time to running.²² However, another study showed no difference between the PRP group and the control and, in fact, the Achilles tendon rupture score was lower in the PRP group. The author suggested that PRP may be detrimental when used intra-operatively.²³

PRP and Knee Osteoarthritis

Knee osteoarthritis has been studied and compared to other treatment modalities such as visco-supplementation. Sanchez, in 2012 in the *Journal of Arthroscopic and Related Surgery*, showed

superior results of PRP in mild to moderate osteoarthritis.²⁴ Patel et al., in 2013 in the *American Journal of Sports Medicine*, found PRP was superior to placebo but the results declined after six months and there was no advantage of two PRP injections over one.²⁵

Cerza showed better clinical outcomes in PRP group.²⁶ Compared to hyaluronic acid injections, PRP was effective for grade III osteoarthritis and hyaluronic acid supplementation was not. Filarado, in the *BMC Musculoskeletal Disorders* in 2012, compared three weekly PRP injections versus hyaluronic acid injections and found no significant difference.²⁷

The AAOS Clinical Practice Guidelines are unable to recommend for or against growth factor-PRP injections for patients with symptomatic osteoarthritis of the knee. A recent article by Riboh in the *American Journal of Sports Medicine* in 2015 showed that leukocyte poor PRP resulted in improved functional outcome scores when compared with hyaluronic acid and placebo for osteoarthritis of the knee.³⁴

The increase in investigational studies regarding PRP has fueled the demand for increased clinical use. The market for PRP has gone from \$45 million in 2009 to an expected \$126 million by 2016.²⁸ A cost-benefit analysis has not been proven. Since PRP is listed as experimental by most insurance companies, it is not covered and reimbursed by most insurance plans. The questions that need to be answered in the future concern scenarios where the immediate cost of PRP might be greater, but if there is decrease in further treatments such as surgery and reinjection, then there indeed may be a cost savings.

In summary, PRP injections have been shown to be detrimental or not helpful in bone healing. There are some possible benefits from knee osteoarthritis, tennis elbow, and ACL reconstruction. There have been indeterminate results with Achilles tendinitis, rotator cuff repair, and Achilles tendon repairs.

Stem Cells

Stem cell usage has also exploded in sports medicine and orthopaedics as a form of treatment for injuries and recovery. Stem cells are undifferentiated cells that can mature and differentiate into several cell lines. Stem cells can reproduce, differentiate, and activate other cells in the environment for biologic activity. There are hematopoietic stem cells that give rise to other blood cells. These are found in bone marrow and to a lesser degree in peripheral blood. Mesenchymal stem cells (MSC) can differentiate into bone, cartilage, and fat. Mesenchymal stem cells can be obtained from bone marrow, adipose tissue, synovial tissue, and periosteum.

Mesenchymal stem cells are found in bone marrow and are readily obtained. Mesenchymal stem cells make up 0.01 percent of cells in bone marrow. This bone marrow aspiration is usually centrifuged to concentrate the cell numbers. Even with centrifuge, it still has fairly low numbers available. Stem cells can be cultured in vitro but this limits their clinical application and has a significant cost associated.

Mesenchymal stem cells can be obtained in adipose tissue. An aspiration of adipose tissue produces lipo-aspirate cells of which approximately two percent are stem cells. This is more than 500 times the level in a bone marrow aspirate per gram.²⁹ Adipose tissue mesenchymal cells are a more recent method of obtaining mesenchymal stem cells.

Many animal studies have showed mesenchymal cells in the animal model that enhance meniscal repair and better healing of cartilage defects with mesenchymal stem cell injections. There has also been noted improvement in microfracture results as well, with better histology, with microfracture plus bone marrow aspirate injections.

Adipose drawn stem cells for osteoarthritis in animal model has been studied. An article by Ter Huurne showed that adipose derived stem cells inhibited synovial

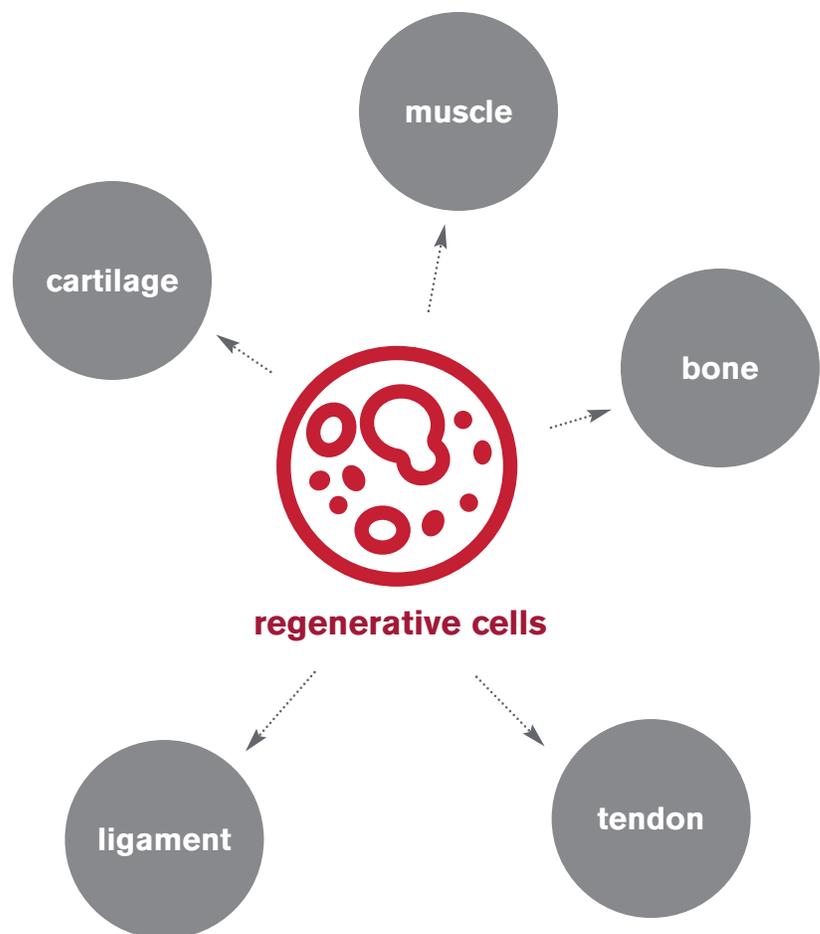
thickening and cartilage destruction in mice with early stage arthritis.³⁰

Mesenchymal stem cells in human studies have shown some promising, yet mixed results. An article by Nejadnik in the *American Journal of Sports Medicine* showed no difference in clinical outcomes between an ACI group, versus bone marrow mesenchymal stem cells for cartilage defects when periosteal patch was used.³¹ Saw et al. in *Arthroscopy* 2011 did a study with the stem cells and microfracture and showed that the histology in this human study of repaired cartilage improved when this was coupled with mesenchymal stem cell injections and the microfracture.³² Another study by Saw et al. in *Arthroscopy* 2013 compared microfracture with hyaluronic

acid with microfracture with hyaluronic acid and peripheral blood stem cells having a better repair with the stem cells, but had similar clinical outcome scores.³³

Mesenchymal stem cells in the United States are available with autologous mesenchymal stem cells from whole blood, bone marrow aspirate (BMA), and bone marrow aspirate centrifuge (BMAC) as well as adipose derived mesenchymal stem cells. Allogeneic are available with allograft bone matrix as well as placental derived tissue.

Autologous mesenchymal stem cells from whole blood have very low numbers of mesenchymal stem cells. Bone marrow has .001 percent of mononuclear cells. Because of this low number this bone marrow aspirate is usually centrifuged to concentrate





the numbers of stem cells. Usually the bone marrow aspirate is centrifuged and applied to the site within 15 minutes.

The stem cells can be increased via culture process. This takes several weeks and significantly increases the cost. There are concerns of this culture growth causing immunogenicity problems as well as the possibility of genetic instability which leads to the possibility of tumors developing. With the product being taken out of the initial patient sterile environment, transported, and then reapplied, increased infection risks are always a concern. Currently there are no approved therapies for these cultured stem cells outside of ACI usage. There are

also ways to increase mesenchymal stem cells with cell surface markers that are either fluorescently activated cell sorting or magnetically activated cell sorting, but this can be costly and also raises the question of antibody exposure.

Adipose derived mesenchymal stem cells are produced from a lipoaspirate that is agitated and microfractured in a closed system. It is concentrated for injection and it is approved for homologous use.

Placental derived allograft products also are available. Currently it is mainly used in wound healing applications. There are some animal studies, but there is a concern that with the non-homologous

use of the product. This seems to be a gray area for the FDA and may limit its use.

The Future and Beyond

The future of biologics in the treatment of sports medicine and musculoskeletal disease is exciting. Sports medicine physicians are in the early stage of understanding its clinical uses and application. As of right now, orthopaedic and sports medicine applications for PRP show some good data available, but with so many products available, with varying concentration levels and variability in the application, this makes clinical interpretation difficult. With the heterogeneity in tendons and tendonopathies defining protocols is important. There is some good data, but the results are not completely clear. Protocols need to be standardized. Identifying what works in the human environment is also needed. Future research must define the correct platelet leukocyte count and the balance ratio between the two, as well as what plasma proteins are helpful in a specific clinical setting. The future may have second generation PRP that will neutralize the negative or unwanted growth factors and enhance the positive growth factors that would be beneficial for a prescribed clinical setting. Maybe there will be a combination of PRP or other blood products added to a stem cell or some scaffold that will produce a more improved and predictable clinical result.

Future methods to improve clinical efficacy include improving the formula for the specific indication. As we learn more, we can try to exclude unwanted growth factors and possibly concentrate the positive growth factors, and maybe use blood sources other than platelets.

Mesenchymal stem cells have promise, and some recent data show immense promise. This indeed is an exciting frontier of possible future treatments to the athlete for the sports medicine physician.

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Hamstring Strains

Lance LeClere, MD, and John-Paul Rue, MD

Hamstring strains are the most common muscle strain in competitive sports, but can be a treatment challenge for medical staff because of slow healing rates, persistent symptoms, and high recurrence rates. Recurrence rates have been reported as high as 1 in 3 within the first two weeks of return to sports.¹ Optimal treatment and rehabilitation protocols are yet to be determined and numerous algorithms have been published.² Recently, a novel treatment approach was published, with results demonstrating an average return to sports at approximately two weeks and low re-injury rate in Grade I and II hamstring strains.³

The key components of the rehabilitation protocol as published by Kilcoyne et al. are immediate but brief immobilization after injury, followed by early mobilization with a combination of supervised drills and stretches.³ Immediately after injury, a 5-in foam pad is placed over the posterior thigh and held in place with a snug compressive wrap, and a knee immobilizer is placed on the injured extremity. Weight bearing is allowed as tolerated. After 24 hours, the knee immobilizer is removed and the pad/compressive wrap are left in place. NSAIDs are withheld for the first 24 hours.

On post injury day one, the athlete jogs until fatigued (approximately 1 mile), followed by a 40 minute ice treatment. On post injury day two, a run protocol is started that includes “butt-kickers,” tuck jumps, and other running exercises.

If a sharp pain is felt, the intensity of the drills is decreased but not stopped completely.

In addition to the running protocol, a progressive static elevated/standing stretching technique is initiated on post-injury day two. By standing and elevating the leg to 48 inches and progressing based on height and flexibility of the athlete, hip flexion is prevented and simultaneous stretching of the hamstring origin and insertion occurs.³

Eccentric exercises begin on post-injury day six and are performed three times per week. Rolling sprints are typically initiated on post-injury day seven. When the athlete has equivalent hamstring strength on cybex testing, perceives equivalent function between the injured and uninjured legs, they are returned to sport.³ In their report of 48 hamstring injuries, Kilcoyne et al. had an average return to sport of 11.9 days, with 6.2 percent recurrence with a minimum follow-up of six months.³

1. Sherry MA, Johnston TS, Heiderscheid BC. Rehabilitation of acute hamstring strain injuries. *Clinics in Sports Medicine*. 2015. 34(2):263-284.
2. Prior M, Guerin M, Grimmer K. An evidence-based approach to hamstring strain injury: A systematic review of the literature. *Sports Health*. 2009. 1:154-164.
3. Kilcoyne KG, Dickens JF, Keblish D, Rue JP, Chronister. Outcome of grade I and II hamstring injuries in intercollegiate athletes: A novel rehabilitation protocol. *Sports Health*. 2011. 3:528-533.

PATIENT GUIDE TO SPORTS INJURIES AND PREVENTION

The STOP Sports Injuries website has numerous resources to help young athletes understand what causes common sports injuries, how to go about treatment, and tips for preventing injuries in the future. You can also refer patients to the blog site for fresh articles on sport and injury specific information at www.stopsportsinjuries.org/blog.aspx.

Do You Access the STOP Sports Injuries Website in Internet Explorer?

Be sure to enable compatibility mode in “Settings” to optimize viewing, or switch to another browser—and be sure to look out for our new mobile, multi-browser friendly website launching early 2016!

Printed Tip Sheets Update

We will be discontinuing the print versions of our tip sheets at the end of 2015. If you would like to order hardcopies for your office, please visit www.stopsportsinjuries.org/store.aspx. All online materials will still be available for download.



Make Sports Safer in Under 140 Characters

STOP Sports Injuries hosts monthly tweet chats to provide a forum for discussing youth sports safety concerns—with topics ranging from common injuries to prevention plans and tips. These hour-long sessions draw a broad audience, including athletes, parents, and coaches, as well as health professionals from varying fields who are charged with the care of injured athletes. Join the Twitter conversation every second Wednesday of the month at 9 PM ET / 8 PM CT under the #SportsSafety hashtag. Just a simple tweet can help keep athletes in the game!

Welcome to Our New Collaborating Organizations!

Thank you to the newest STOP Sports Injuries collaborating organizations for their commitment to keeping young athletes safe. Interested in having your practice or institution listed in the next *SMU*? Head over to www.STOPSportsInjuries.org and click “Join Our Team” to submit an application!

Sports Medicine Practices

Functional Physical Therapy Center
Boise, Idaho

Mount Carmel Sports Medicine Specialists
Hilliard, Ohio

OrthoWilmington
Wilmington, North Carolina

Ortopedia en Venezuela
Puerto la Cruz, Venezuela

ProStar Massage & Holistic Therapy
East Brunswick, New Jersey

SHIFT Performance Inc
Miami Beach, Florida

SPORTSMED.SA
Stepney, United Kingdom

Twin Cities Orthopedics
Minneapolis, Minnesota

Sports & Recreation Organizations

LSU University High School Sports Medicine
Baton Rouge, Louisiana

Sportoya
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Ten19 Athletics
Christiana, Tennessee

WimX Academy
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Medical Institutions

Cass County Memorial Hospital
Atlantic, Iowa

STOP Sports Injuries thanks the following companies for their continued support:



AOSSM 2016 ANNUAL MEETING ABSTRACT SUBMISSIONS

Now Open

**Abstract Submission Deadline:
November 3, 2015 (Noon) CST**

Visit www.sportsmed.org for complete details.
Abstracts are only accepted via the website.

Nominating Committee Voting Begins in September

Look for an e-mail in mid-September from Allen Anderson, MD, AOSSM President, encouraging you to cast your electronic vote for four members to the 2015–2016 AOSSM Nominating Committee. The following individuals were nominated at the Business Meeting during the AOSSM Annual Meeting in Orlando:

Christopher S. Ahmad, MD	Lee D. Kaplan, MD
E. Lyle Cain, Jr., MD	Michael D. Maloney, MD
John E. Conway, MD	Edward R. McDevitt, MD
Diane L. Dahm, MD	Alison P. Toth, MD
David R. Diduch, MD	Edward M. Wojtys, MD

OMeGA Fellowship Grants Available

OMeGA Medical Grants Association (OMeGA) is accepting applications for 2016–2017 fellowship grants. Grants up to \$75,000 support clinical fellowship programs in all nine orthopaedic subspecialty categories and may be used for fellow salaries, benefits, and educational expenses. The application period opens Monday, September 28, 2015, and closes Tuesday, December 8, 2015, 5 p.m. CDT. For more information and details visit www.omegamedicalgrants.org.

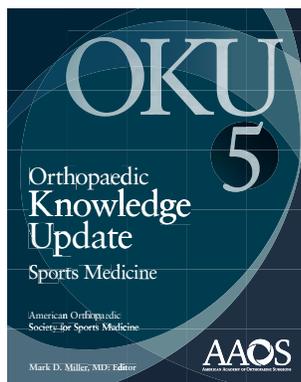
CLINICAL PRACTICE SURVEY RESULTS RELEASED



The 2015 web-based Clinical Practice Characteristics Survey was distributed in early January to all AOSSM members with 658 members completing the questions. The survey investigated the characteristics and changes in clinical practice and will serve as a benchmark for future research by the Society. Several key insights from respondents were noted:

- Changes in the economy and in insurance coverage has had a negative effect on overall surgical volume
- Majority did not change use of hyaluronic acid (HA)
- Minority anticipated biologics would play more than a minor role in their practices in next five years
- Most respondents were somewhat satisfied with their ability to influence purchasing decisions
- Industry should play a role in supporting educational and research activities

To view the complete details on the survey, login at www.sportsmed.org and click on the Society Documents link on the left. Questions, contact Kevin Boyer, Research Director, kevin@aossm.org.



To order, visit
www.aaos.org/OKUsports
or call 800/626-6726.

Stay on Top of Your Game with the New *OKU Sports Medicine 5*

OKU: Sports Medicine 5 brings together the most relevant literature and the latest research, including extensive updates in knee and shoulder, from the past five years. Top experts, including AOSSM member and editor, Mark D. Miller, MD, collaborated on this succinct review of pertinent advances in sports medicine. Find brand-new content on bone loss in instability, proximal biceps injuries, ACL reconstruction, meniscal posterior horn tears, and much more. In addition to reading about surgical techniques, view high-quality videos that provide step-by-step instructions for intricate and detailed procedures. Close the time gap between learning and applying innovative skills while expanding your surgical options.

Hosea Passes Away



AOSSM is deeply saddened by the sudden passing of long-time member, and Team Physician Committee Chair, Dr. Timothy Hosea on August 8, 2015, while at his vacation home in Pennsylvania. Dr. Hosea was a widely-respected and accomplished orthopaedist with special expertise in sports medicine. He was also an extremely caring and compassionate physician to scores of patients, his teams, and the entire community in which he lived. Among his many accomplishments, he served as Team Physician for the USRowing national team at 12 world rowing championships, and most recently, was the U.S. Olympic Team Physician for the rowing and athletic teams at the London Games in 2012. Locally in Princeton, New Jersey, where he lived and worked, he was the orthopaedic consultant and team physician for Rutgers University, where he traveled with the football team for the past 30 years.

Tim is survived by his wife of 40 years, Elizabeth (Libet) Murray Hosea, and three daughters, Hadley Elizabeth Hosea, Mary Whitney Hosea, and Katherine Kirby Hosea. Tim is also survived by three brothers, David (Valerie) of Palm Coast, Florida, Mark (Sharon) of Orchard Lake, Michigan, and Paul (Crisi) of Laguna Beach, California, along with numerous nieces, nephews, and a wide and wonderful circle of friends. Dr. Hosea will be greatly missed by all who were privileged to know and work with him. In lieu of flowers, the Hosea family graciously welcomes contributions to the Timothy M. Hosea Memorial Fund at the Princeton National Rowing Association. Donations may be sent to Princeton National Rowing Association, Timothy M. Hosea Memorial Fund, 1 South Post Road, Princeton Junction, NJ 08550, or at www.rowpnra.org under the Support PNRA tab.



Interested in Becoming a Member of the Traveling Fellowship Family?

Applications are currently being accepted for the 2016 AOSSM Traveling Fellowship Tour. Next year chosen AOSSM members will go to Europe. Tentative tour dates for the ESSKA tour will be April 12–May 7, 2016, with the tour ending at the ESSKA Congress in Barcelona, Spain. The Godparent for this tour will be Edward Wojtys, MD. Three fellows will be chosen from the applicants by the Traveling Fellowship Committee. Fellows will have the opportunity to view live and/or cadaveric surgery, tour surgical and rehabilitative facilities, observe local sporting events, and spend time socially, as well as professionally, with regional experts in sports medicine.

Applicants must be an orthopaedic surgeon currently practicing in the U.S. or Canada and be 45 years of age or under. Individuals interested in participating in the Traveling Fellowship can complete the online application at www.sportsmed.org. Incomplete applications or those received after the deadline of October 31, 2015, will not be considered. Please e-mail Debbie Czech at debbie@aossm.org directly or call 847/292-4900 for more information.

AOSSM gratefully acknowledges  for their support of the Traveling Fellows program.

NAMES IN THE NEWS

Harner Named Vice Chair of Academic Affairs

Congratulations to past AOSSM President, **Christopher Harner, MD**, on his new position at the University of Texas at Houston. He will be serving as Professor, Sports Medicine Fellowship Program Director, and Vice Chair of Academic Affairs.

New Member of Female Health Triad

AOSSM wishes to thank member, **Mark Hutchinson, MD**, for his 14 years of service as the Society's representative to the Female Athlete Triad Coalition. He will continue to be involved in the important work of this group as treasurer. The Society's new representative for the Coalition will be **Mary Lloyd Ireland, MD**.

Nominations for HALL of FAME Available Soon

Do you know of an outstanding mentor or colleague who belongs in the AOSSM Hall of Fame? Applications will be available in October at www.sportsmed.org.

AOSSM Dues Notices Sent

Dues notices were sent via e-mail August 1. Members have 30 days to pay. If you do not pay within a 120 days, your benefits will be suspended. Anyone owing more than one year's dues will be terminated from membership and have to reapply to become a member again. Questions, please contact Debbie Czech, Membership Manager at Debbie@aossm.org.



Got News We Could Use? Sports Medicine Update Wants to Hear from You!

Have you received a prestigious award recently? A new academic appointment? Been named a team physician? AOSSM wants to hear from you! *Sports Medicine Update* welcomes all members' news items. Send information to Lisa Weisenberger at lisa@aossm.org. High resolution (300 dpi) photos are always welcomed.

Jump into the Conversation

Join in on our youth sports injury prevention TweetChats held monthly the second Wednesday of the month at 9 PM ET/8 PM CT at #SportSafety. AOSSM, *AJSM*, *Sports Health*, and *OJSM* are also all on social media. Learn about the latest news and articles and stay up to date on Society happenings and deadlines.

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[Twitter.com/OJSM_SportsMed](https://twitter.com/OJSM_SportsMed)

Member Mark Sherman, MD, Creates Opportunities to Encourage Youth Unity

Each year, for the past 13 years, AOSSM Member, Mark Sherman, MD, and his surgical tech partner, Jacob Carey, take 400 kids from every borough in New York along with Washington D.C. and New Jersey and host the Unity Games. For two days, the Unity Games create an educational program that utilizes basketball as a vehicle to bring girls and boys of every race and culture together.

“Integration is forced by creating equal teams of race and ability. During the program, these adolescents also intermix in classrooms where they learn about Internet safety, the hazards of gangs and bullying, overcoming obstacles, cultural sensitivity, and play in basketball games and contests.

If they don't know each other's names by the first morning, then they lose points in the game,” said Sherman, who has been a sports medicine orthopaedic surgeon for the past 35 years in Staten Island, New York.

Sherman and Carey work together to create the event through sponsorships with local banks, companies, and even former patients. They provide everything for free to the 7th and 8th graders, including uniforms, meals, housing, and transportation.

“As sports medicine doctors, we always talk about outcome studies. The letters I receive and the visible change in how the kids are learning to interact more positively is making an important impact in our community,” said Sherman.

For more information or to get involved with the Unity Games, visit www.theunitygames.com.

→ TELL US WHAT YOU DO

Sports Medicine Update is looking for individuals to highlight the various activities, team coverage, and work our members do every day in their local communities and institutions. Whether you've been practicing sports medicine for 40 years or just five, or know someone who is performing some amazing feats caring for athletes of all levels and ages, we'd love to hear about it! Please forward your story or your colleague's to Lisa Weisenberger at lisa@aossm.org.



Research Grant Submissions Now Being Accepted

AOSSM is now accepting applications for the Young Investigator (*supported through an educational grant from Musculoskeletal Transplant Foundation*) and Sandy Kirkley Clinical Outcomes research grants. The final submission deadline is December 1, 2015.

Applications are also being accepted for the AOSSM/Sanofi Biosurgery Osteoarthritis (OA) grant which provides \$50,000 to support either a clinical research study or a lab/basic science project related to OA and/or prevention of OA progression. Deadline for submissions is January 1, 2016.

For complete research grant application details visit www.sportsmed.org/research.

Early Sports Specialization Workshop to Discuss Next Steps

AOSSM is hosting an Early Sports Specialization Workshop on Friday, October 2, 7:30 a.m.–3:15 p.m., at the Orthopaedic Learning Center in Rosemont, Illinois. An experienced group of experts from around the world will be helping the Society better define the issue and understand the science of early sports specialization and its ramifications on our youth. Ultimately, the forum is an opportunity for the sports medicine community to identify steps for moving forward with further education, research and collaboration. AOSSM will capture the meeting and share the information and insights with members in the near future.





WASHINGTON UPDATE

By Julie Williams, AAOS Senior Manager Government Relations

Meaningful Use/Senate Hearing on Information Blocking

There has been momentum in terms of the effort to delay Meaningful Use (MU) Stage 3 implementation. Rep. Renee Ellmers (R-NC) has introduced H.R. 3309, which AAOS supports, to delay Stage 3 implementation until one of two things happens: 1) 75 percent of eligible hospitals and providers have attested to MU Stage 2 requirements; or 2) the MIPS final rules are promulgated. It also harmonizes reporting requirements for MU, PWRs, IQR to remove duplicative measurement and streamline requirements from the Centers for Medicare & Medicaid Services (CMS); institutes a 90-day reporting period for each year; encourages

interoperability among electronic health record (EHR) systems; and expands hardship exemptions.

On the Senate side, the Committee on Health, Education, Labor and Pensions (HELP) recently held a hearing on the practice of “information blocking” and raised the question of whether the federal government, through its program to encourage adoption of EHRs, played a role in encouraging the practice. Chairman Alexander suggested that the committee push to delay implementation of MU Stage 3 saying, “Let’s not go backward on EHRs, but let’s not impose on physicians and hospitals a system that doesn’t work and which they spend most of their time dreading.”

Comprehensive Care for Joint Replacement

On July 9, the CMS proposed a new payment model that would bundle payment to acute care hospitals for hip and knee replacement surgery. While supportive of the concept of bundling, AAOS has some concerns about the proposal and is submitting a comment letter to CMS which will be circulated through the BOS SPDR process.

21st Century Cures/Innovation for Healthier Americans

The Senate is likely to introduce its companion to the House 21st Century Cures proposal in September. The House measure, which passed on July 10 by a vote of 344-77, seeks to provide better, faster, safer, and more innovative approaches to treat diseases. It includes increased funding for the NIH, expedited device approval, a centralized IRB, interoperability language, telehealth provisions, improvements in LCDs, a national pediatric research network, and much more. The Senate companion is expected to be similar but with more of a focus on interoperability. Floor action is expected after the first of the year. Both the House and the Senate are negotiating with the White House and the appropriate agencies, so there is a significant chance this will become law.

Women’s Health Research

Report language regarding women’s health research was included in last year’s omnibus appropriations bill and this year’s Labor/HHS funding bill. Report language is non-binding language that accompanies a bill. Though non-binding, it sends a message to Congress. This year’s language, among other things, asked for the National Institute of Health to ensure the analysis of data by sex and other subgroup demographics are a part of the grant progress reporting and to fund studies on sex differences and conditions that predominately impact women.



gratefully acknowledges the following individuals for their 2014 contributions—both direct and via OREF's Designated Giving Program!

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AOSSM has made a significant impact on the career of each orthopaedic sports medicine specialist and on the profession, through advances derived from AOSSM-funded research designed to answer important clinical questions. As a valued member of our team, please do your part to keep our momentum going strong by making a tax-deductible 2015 contribution at www.sportsmed.org/individualgiving.

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January 22–24, 2016
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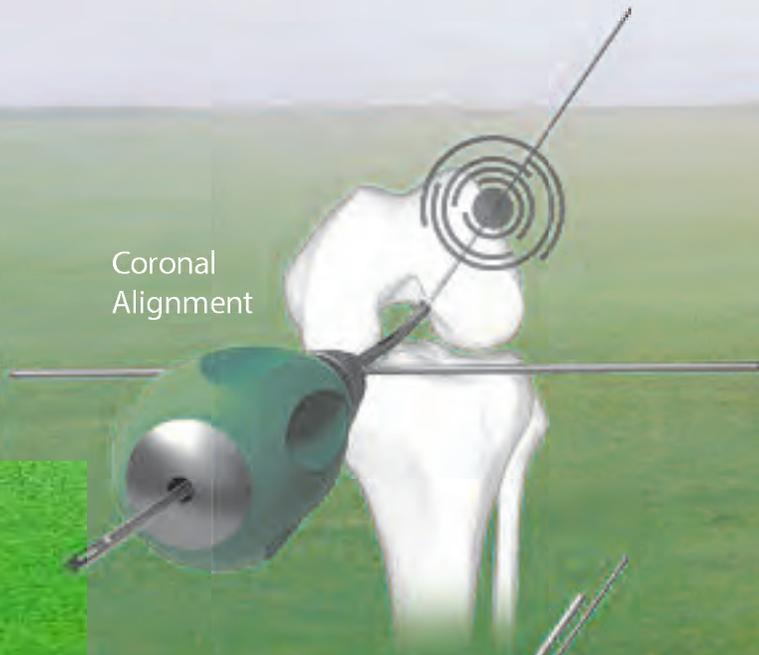


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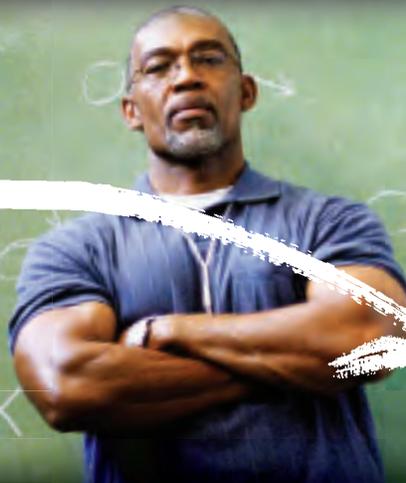
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