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THE ELEVEN BEST SPORTS MEDICINE TECHNOLOGIES FOR 2016

ROBIN YOUNG • THU, JULY 14TH, 2016



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The 11 winning companies with the BEST new sports medicine technologies for 2016 are: AlloSource, Arch Day Design (Smith & Nephew), CyMedica Orthopedics, Lipogems, Micro-Imaging Solutions, Orthopedic Sciences, Össur, Stryker, Topical Gear, VICIS, Vumaris Innovations and ZipLine Medical.

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GREAT DEBATES



The Cementless Tibia: A Viable Fixation Alternative

Rewarding Innovation and Perspiration

This annual 2016 award rewards inventors, engineering teams, physicians and their companies who've created the most innovative, enduring and practical products and technologies to treat injured athletes in ANY activity—whether sports, industry, military or healthcare. To win the *Orthopedics This Week* Best New Technology Award for Sports Medicine care, a new technology must meet the following criteria:

1. Be creative and innovative.
2. Have long term significance to the problem of treating the injured athlete. Does this technology have staying power?
3. Solve a clinical problem. To what extent does this technology solve a current clinical problem or problem that is inadequately solved today?
4. Does it have the potential to improve standard of care?
5. Is it cost effective?
6. I would use it.

Our panel of physicians score every submission on a scale of 1 to 5 (5 being the highest score) for each of the above criteria.

We and our panel of surgeons were impressed that inventors—despite ever growing hurdles to innovation and entrepreneurship in medicine—still managed to create a solid group of nearly 40 new products to submit for the 2016 *Orthopedics This Week* Sports Medicine Technology Awards.

Submitters

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FEATURED NEWS



VSS Capital Partners Invests in Podiatry Growth Partners



We offer our thanks and deep appreciation to the engineering teams, surgeon inventors and the following companies for submitting their best ideas this year:

Active Implants LLC	AlloSource®	Aperion Biologics, Inc.
Augmenta Spine	Arch Day Design / Smith & Nephew	Arthrex, Inc.
Arthrosurface	CollPlant LTD	ConMed
CyMedica Orthopedics, Inc.	DJO LLC	EOS imaging
FastForm Research Ltd (BREG)	JRF Ortho	LifeWalker Mobility Products
Lipogems	MediTouch	Micro-Imaging Solutions LLC
Nice Recovery Systems	Orthopedic Solutions LLC	Orthopedic Sciences, Inc.
Össur	Ranfac Corporation	Strauss Surgical
Stryker Corporation	Tensor Surgical	Topical Gear
Trice Medical	VICIS, Inc.	Vomarix Innovations, Inc

Avail Medsystems Raises \$100 Million in Series B Funding



IMED Surgical Files Federal Lawsuit Over External Fixation System



Risky Business – The Hard and Soft Side of Risk Management



Potentially Game-Changing TKA System Has 1st Surgery



Castellvi Meeting's Remarkable Biomechanics/Biomaterials Course

ZipLine
Medical, Inc.

The Judges

Our intrepid panel of surgeon judges were:

- James Andrews, M.D.:** Dr. Andrews is the Dean of Sports Medicine and Clinical Professor of Orthopaedic Surgery at the University of Alabama Birmingham Medical School, the University of Virginia School of Medicine, the University of Kentucky Medical Center, and the University of South Carolina Medical School. Dr. Andrews also holds a Doctor of Laws Degree from Livingston University, Doctor of Science Degree from Troy State University and a Doctor of Science Degree from Louisiana State University. He is the founding partner and medical director of the institute that bears his name—The Andrews Institute in Gulf Breeze, Florida. Dr. Andrews is mentor for more than 150 orthopedic/sports medicine fellows and more than 30 primary care sports medicine fellows. He has made major presentations on every continent and has authored numerous scientific articles and books. Dr. Andrews is a member of the American Board of Orthopaedic Surgery and the American Academy of Orthopaedic Surgeons. He has served on the Board of Directors of the American Orthopaedic Society of Sports Medicine and the Arthroscopy Association of North America and the International Knee Society. At present, Dr. Andrews serves as Co-Medical Director for Intercollegiate Sports at Auburn University, Senior Orthopaedic Consultant for Intercollegiate Athletics at the University of Alabama and consultant for the

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Ortho Panel Backs FDA on Classification Recommendations

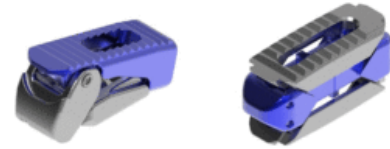


SI Joint Fusion Revision System Cleared by FDA

athletic teams of Troy University, University of West Alabama, Tuskegee University and Grambling University.

- **Brian Cole, M.D.:** Cole is Associate Chairman and Professor, Department of Orthopedics, Chairman, of the Department of Surgery at Rush and Section Head, Cartilage Restoration Center at Rush. Dr. Cole is also a Professor in the Department of Orthopedics with a conjoint appointment in the Department of Anatomy and Cell Biology at Rush University Medical Center in Chicago, Illinois. In 2011, he was appointed as Chairman of Surgery at Rush Oak Park Hospital. He also serves as the head of the Orthopedic Master's Program and trains residents and fellows in sports medicine and research. He lectures nationally and internationally, and through his basic science and clinical research has developed several innovative techniques for the treatment of shoulder, elbow and knee conditions. He has published more than 1,000 articles and has published 5 widely read textbooks in orthopedics. In 2009, Dr. Cole was selected as the "NBA Team Physician of the Year." He is the team physician for the Chicago Bulls NBA Basketball team, co-team physician for the Chicago White Sox Major League Baseball team and DePaul University in Chicago.

- **John Dorris, M.D.:** Dr. Dorris is one of busiest sports and general orthopedic physicians in the United States. A member of the American Academy of Orthopedic Surgeons, Clinical Orthopedic Society, American Association of Sports Medicine, Southern Orthopedic Association, and Georgia Orthopedic Society, Dr. Dorris has built a strong practice treating joint pain, sports injuries (ACL tear, meniscus tear, rotator cuff tear, tennis elbow, golfer's



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elbow, labral tear), tendon pain (elbow pain, heel pain, knee pain), fractures, and other orthopedic issues. His medical education is from Tulane University, internship and residence at Emory University and fellowship at Steadman Hawkins clinic in Vail, Colorado.

- **David Petron, M.D.:** Petron is Assistant Professor (clinical) at the University of Utah and is a primary care orthopedic/sports medicine specialist. He originally trained in family practice and then completed a fellowship in primary care orthopedics and sports medicine at Michigan State University. Dr. Petron is the Director of Primary Care Sports Medicine and the team physician for the University of Utah athletic teams. He is also a team physician for the U.S. Ski Team and is the Medical Director for the Park City Ski Injury Clinic. Dr. Petron specializes in non-operative treatment of the spine, shoulder, knee, ankle, and foot problems. He also has a special interest in overuse injuries that lead to tendonitis. He utilizes the latest treatments for this, including shock wave therapy (Sonarex), for chronic tendon problems. Dr. Petron also has a special interest in all non-operative treatments for osteoarthritis and performs various injections (such as Synvisc) to alleviate joint pain.
- **Tom Vangsness, M.D.:** Dr. Vangsness is a Professor in the Department of Orthopaedic Surgery at the Keck School of Medicine of University of Southern California (USC). Dr. Vangsness is internationally recognized for his expertise in shoulder and knee surgery and has conducted and published extensive research with a focus on such topics as shoulder and ligament biomechanics, molecular biology and sports medicine, allograft transplantation, radiofrequency

energy effects on articular cartilage, meniscal cartilage and ligaments. Dr. Vangsness is a team physician for USC Athletics and has a special interest in sports injuries. A recipient of numerous university and national academic awards as a teacher and researcher, Dr. Vangsness is also on the editorial board of the *Journal of Arthroscopy* and *The Journal of Knee Surgery*. He is a member of several other prominent organizations including the American Orthopaedic Society for Sports Medicine, American Shoulder and Elbow Surgeons, and The International Society of Orthopaedic Surgery and Traumatology. Dr. Vangsness has recently published a book entitled "The New Science of Overcoming Arthritis."

Here, then, are the 11 best new sports medicine technologies for 2016 arranged in alphabetical order.



(L to R): Robin Young, Peter Stevens, Ph.D., MBA, Susan Tice, MBA,

Carolyn Barrett, BS, MBA, Meghan Gabriel, Tom Cycyota

AlloSource®

Winning Technology: ProChondrix® Cartilage Restoration Matrix

Inventors: Carolyn Barrett, MBA – Scientist

Engineers: Matt Southard – R&D Engineer,
Meghan Gabriel – Manufacturing Engineer

ProChondrix is a cellular three dimensional fresh allograft cartilage matrix. This matrix provides live, functional cells and other biological components necessary for the natural repair and regeneration of damaged cartilage tissues.

The implant also has native growth factors, an extracellular matrix which helps support a structure for cellular migration and adhesion and viable chondrocytes. It is a purely natural solution intended to maintain its homologous use from donor to recipient.

ProChondrix naturally contains the three key components (scaffold, signal, and cells) necessary for the repair and regeneration of damaged cartilage tissues. It naturally matches biomechanical and biochemical properties of normal hyaline cartilage, may restore a smooth articular cartilage surface, relieve patient symptoms and improve function.

ProChondrix is a cost-effective, single-stage alternative to marrow stimulation procedures, chondroplasty or full-thickness osteochondral replacements. It is implanted arthroscopically or in a minimally invasive procedure. Finally, ProChondrix eliminates the need for autografting, which risks donor-site morbidity.



*Smith & Nephew (L to R): Gave Veloz, Eric Duggan, Stephanie Woelfel,
Danny Moriarty, David Miller, Tyler Linneweber*

Arch Day Design and Smith & Nephew

***Winning Technology:* AccuPass Direct Suture Passer**

Inventors: Roger Pisarnwongs, Tom Weisel Seth Foerster

Engineering Team: Roger Pisarnwongs, Tom Weisel, Seth Foerster, Vince Tangherlini, Greg Bain

The best ideas are the simplest ideas. One of the challenges of passing suture through tissue during an arthroscopic procedure is the difficulty to grab a small loop of suture just barely peeking out or lost among 'fluffy' tissue. The AccuPass Suture Passer presents the surgeon with a large loop of suture after passing so the user can easily grab the suture and pull it out the cannula to complete the pass. This creative mechanism is flexible enough to allow usage within a variety of standard needle shapes for extensive anatomical access.



Arch Day Designs (L to R): Tom Weisel and Roger Pisarnwongs

This solution works well where joint spaces are very tight and don't allow for aggressively free needle movement. With the AccuPass you can deploy a loop of suture on the far end of the tissue so large that when the surgeon removes the needle it does not appreciably pull back and affect the loop size. That large loop is easy for the user to grab and pull out the cannula with this simple, intuitive, one-handed device. AccuPass uses a specially designed Nitinol wire that hooks the suture but also pulls it deep into the needle tube. Once the needle pierces the tissue, the unique wire design ejects the captured suture out the tube to become a large loop on the far side. Even if the loop is pulled back slightly during removal of the needle there is still a large target (suture loop) remaining that is easy for the surgeon to grab and retrieve. The wire form has been optimized to handle a variety of suture sizes and to be used several times in a case. It has also been designed for inexpensive manufacturing that allows it to be built in to a price competitive single patient use device.



(L to R): Bryti Ketchum, Rob Morocco, Struan Coleman, M.D., Ph.D., Robin Young, Ron Yagoda, Chairman, Josh Butters

CyMedica Orthopedics, Inc.

Winning Technology: e-Vive with CyMotion Technology

Inventors: Struan Coleman, M.D., Ph.D., David Saar, Calvin Domenico, Lee Knox, Edison Gieswein, Marlina Kessler, Joshua Butters

Engineering Team: Joshua Butters, Marlina Kessler, David Saar, Benjamin Giguere, Lee Knox, Dharmavirsinh Jhala, Shane McCauley

CyMedica's e-Vive™ muscle activation system with CyMotion™ neuromuscular electrical stimulation (NMES) technology delivers an individualized, home based, wireless, app-controlled NMES therapy. The system also includes a telehealth data capture and communications capability to transfer real time data to physicians through the cloud based intelliHUB™ provider portal.

The primary objectives of sports related knee ligament surgery is to restore knee function to pre-injury levels and promote long-term joint health. Quadriceps strength and endurance are of vital importance for normal knee joint function, so restoring normal quadriceps function after knee joint injuries is an essential component of

rehabilitation. Typically rehab programs to strengthen quadriceps focus on voluntary exercises which have hit or miss outcomes. Home Neuromuscular electrical stimulation (NMES) systems are a promising intervention to use after ligament repair removing the barrier of muscle inhibition on behalf of the patient and activating the quadriceps muscle.

The e-Vive system when combined with CyMotion changes the standard of care for ACL quadriceps strengthening through the remote patient monitoring capabilities and the precise control features of the wirelessly sensed e-Vive app and garment. Clinicians can engage patients in their rehabilitation protocols through interactive goal setting of total range of motion, pain control measures and tracking total steps while also receiving data via the real time tele-rehab evaluation.



(L to R): Mollie Pett, Carl Llewellyn, Robin Young

Lipogems

Winning Technology: Lipogems System

Inventors: Dr. Carlo Tremolada

The Lipogems system is a closed-looped point-of-care device that gently washes and mechanically micro-fragments autologous adipose tissue. This tissue can be used for cushioning, repairing, and restructuring soft tissue defects. For example, under ultrasound guidance, the Lipogems processed tissue can be injected directly into the damaged native tissue to provide a structural graft that sticks to the area and provides a regenerative scaffold.

Lipogems is an FDA compliant option for utilizing the well-known regenerative properties of autologous adipose tissue. Because Lipogems maintain the structural characteristics of the tissue, they are not considered more than minimally manipulated and fall under the CFR1271.361 exemptions, enabling physicians to use the device point-of-care under current FDA regulations.

The viscous properties of the tissue graft allow Lipogems to be injected through a small gauge needle, and the intact stromal vascular niche provides a naturally derived regenerative matrix. The adhesive quality of adipocytes allows the Lipogems to remain where they are injected, providing structural support while remodeling of the tissue occurs. Adipose tissue contains cells and tissue that are capable of regeneration and are optimized by the washing and resizing of the Lipogems. This tissue may exhibit anti-microbial and immune-modulatory characteristics and natural anti-inflammatory effects that may provide a long lasting and natural alternative to steroids, and potentially a regenerative alternative or adjunct to surgical procedures.



(L to R): Robin Young, Eric Dahlinger

Micro-Imaging Solutions, LLC

Winning Technology: Distally mounted CMOS Sensor for disposable/reusable and rigid/flexible scopes

Inventors: Jeffrey Adair

This technology allows for extremely small and higher resolution CMOS Sensors to be placed in distal tip of endoscopes. Current cameras and endoscopes (all types) have remained unchanged for decades and degrade from “Day 1” of utilization thus causing undesirably compromise of visual clarity at an extremely inconvenient time! This technology allows for flexible or rigid applications as a reusable or a disposable with significant value. Utilization of this technology can eliminate the five things that degrade current and problematic technology. It has the real benefit of reducing repair costs as well as OR “down time” and the need to acquire

costly surplus inventory to avoid catastrophes. Every patient can get a new and sterile scope and new applications for scopes are achievable—i.e., flexible HIP Arthroscopes. It clearly can reduce the true cost of ownership and provide OR efficiencies not currently available.



James K. Brannon, MD, FAAOS

Orthopedic Sciences, Inc.

Winning Technology: Piranha Arthroscopic Shaver, Talon Burr and Harrier Burr

Inventor: James K. Brannon, M.D., FAAOS

The Piranha is an arthroscopic shaver with improved fluid flow in single axis rotation. Arthroscopic shavers traditionally oscillate. Many orthopedists would prefer a single axis (direction) of rotation for a smoother surface but, unfortunately, fluid flow with the single axis rotation is diminished. Thus, oscillation is the most frequently used handpiece mode. The Piranha is a standard arthroscopic shaver with improved fluid flow characteristics. The Piranha is available in full radius and fast cut configuration. The lengths are 132 mm and 180 mm. Diameters are 4.5 short and long, and 132 mm for a 3.5 mm Piranha shaver.

Piranha delivers PRECISE, improved and level tissue debridement that is *thorough*. Many *basic* tools for arthroscopy are outdated and more thorough debridement can be achieved when visibility is enhanced, shaver fluid-flow is improved, and burrs are more effective at contouring articular surfaces.

The Talon Burr and the Harrier Burr are disposable, single use, unshrouded handheld arthroscopic burrs. Both fit onto Smith & Nephew, Stryker, and Linvatec handpieces. The Talon Burr is particularly useful at the patella femoral sulcus region. The Harrier Burr is tailored for more surface congruent chondroplasty, i.e., a microchondroplasty and improved cartilage contouring during arthroscopy of the hip, shoulder, and knee joints. The Harrier Burr rapidly contours the cartilage surface more effectively and rapidly than an oscillating arthroscopic shaver or a standard burr. Therefore, more congruent articular surfaces can be realized postoperatively in the performance of a microchondroplasty.

(L to R): Bret Carter, Robin Young

Össur

Winning Technology: Rebound® PCL

Inventors: Arni Thor Ingimundarson, Harry Duane Romo, Bjorn Omarsson, Sri Chetlapali, Thorvaldur Ingvarsson, M.D., Ph.D. and Robert Francis LaPrade, M.D., Ph.D.

Engineer: Jared Olivo, Jane Lee, Bjorn Omarsson, Sri Chetlapali

The Rebound PCL is the world's first dynamic force PCL brace. The brace is designed to apply a physiologically correct dynamic force, optimum for rehabilitation of posterior cruciate ligament (PCL) ruptures, whether during functional (non-surgical) treatment or post-surgical reconstruction. The dynamic load of the Rebound PCL on the tibia is generated by applying an anterior directed dynamic force on the calf area, and opposing counter forces on the anterior aspect of the leg.

The Rebound PCL is indicated for rehabilitation of posterior cruciate ligament (PCL) ruptures, whether post-surgical reconstruction or during functional (non-surgical) treatment.

In a PCL deficient knee, gravity and the forces on the joint from the hamstring muscles can potentially cause the tibia to be positioned in a posterior subluxed location relative to the femur (posterior sag). Healing of the PCL in an elongated position can lead to chronic instability and disability. Therefore, anatomically correct positioning during conservative or surgical rehabilitation is important.

Current PCL braces either act as a barrier to normal motion or apply a static load. The Rebound PCL brace, by contrast, applies physiologically correct dynamic force to the PCL during rehabilitation. The Dynamic Tension System™ (DTS) increases the load on the tibia as the knee goes through flexion, providing an Anterior Drawer force that reduces the load on the PCL, allowing it to heal. The Rebound PCL allows for specific load adaptation according to the patient's individual anatomy and rehabilitation related requirements. For complex ligament reconstruction with PCL injury, the Rebound PCL applies physiologically correct dynamic support for PCL and ensures medial/lateral knee stability.

(L to R): Zachary Meli, Liam McCarthy, Robin Young

Stryker Corporation

***Winning Technology:* SonicAnchor**

R&D Team: Dr. Bernd Robioneck, Dr. Robin Buescher, Joerg Thon, Helge Giersch, Rouven Borowsky, Salvador Jimenez, André Wilke

Marketing Team: Tom Popeck, Boon Quah, Mark Baldisserotto, William McCarthy

SonicAnchor is a truly disruptive new suture anchor design. It uses ultrasound to liquefy a polymeric material which interdigitates with surrounding cancellous bone and securely fixes suture and the soft tissue.

The SonicAnchor system is a small size implant made of a PLDLLA co-polymer that is fully bioresorbable. After a suture is connected, ultrasound is applied, the implant liquefies and interdigitates with the surrounding cancellous bone.

Biomechanical tests have shown that SonicAnchor provides superior fixation when compared to competitive suture anchors of similar size. With a diameter of 2.5mm, the SonicAnchor needs little surface real estate and

no cortical bone for superior for fixation. The implant is radiolucent and MRI safe.

The SonicAnchor was developed to provide superior pull-out and fatigue strength even in de-corticated bone. Median fatigue limit of the SonicAnchor vs. a conventional suture anchor is approximately +95%. The static pull difference is even higher.

SonicAnchor uses PLDLLA which has not been shown to create any adverse events in a four-year clinical trial.

Compared to a threaded interface, the liquefied material results in a larger interface area and thereby provides a higher bonding. As a consequence, implants with a smaller footprint can be developed. In addition, the technology allows using next generation bioresorbable polymers so that hardware removal of the implant is not required and MRI safety is given.

(L to R): Robin Young, Bill Blu, Michael Decker, Ph.D.

Topical Gear

Winning Technology: ACL Tube**Inventors:** Bill Bue**Engineers:** Betsy Russel, Bob McCune

The ACL Tube is a form-fitting thigh sleeve with two embedded buttresses that applies focused topical pressure over the medial quadriceps and hamstrings muscles. Topical pressure stimulates sensory receptors located in these muscles and enhances the central nervous system's ability to detect, interpret and utilize sensory information to produce a coordinated muscular response for dynamic knee joint stability. This neuromuscular response is learned and retained when wearing the ACL Tubes during training or rehabilitation.

Proprioceptive stimulation to the muscles elicits a high fidelity flow of sensory information for the CNS to detect, interpret and formulate quality movement ultimately circumventing neuromuscular deficits. This technology can be used to augment training and rehabilitation for the prevention or functional recovery of musculoskeletal issues. More importantly, it can be used in combination with other devices (i.e., knee bracing) to optimize their positive effects (i.e., protection) while minimizing their negative effects (i.e., atrophy). Hence, the ACL Tube provides a robust clinical tool that improves upon current standards of care.

(L to R): Per Reinhall, Ph.D., Dave Marver, Samuel Browd, M.D., Ph.D.

VICIS, Inc

***Winning Technology:* ZERO1**

Inventors: Dave Marver, Samuel Browd, M.D., Ph.D., Per Reinhall, Ph.D.

Engineering Team: Samuel Browd, M.D., Ph.D., Per Reinhall, Ph.D.

VICIS has developed a completely redesigned football helmet named the ZERO1 which mitigates linear and rotational impact forces to the head. The helmet utilizes four discrete layers of materials to reduce injuries as the result of impacts to the head:

1. LODE Shell: The outer layer that absorbs impact load by locally deforming, like a car bumper.
2. RFLX Layer: A columnar structure that moves omni-directionally to reduce linear and rotational forces. The LODE Shell and RFLX Layer work together to reduce impact forces.
3. ARCH Shell: VICIS' AXIS Fit System determines the relationship between head length and breadth measurements (commonly called an "aspect ratio") for each player.

4. FORM Liner: The FORM Liner is conforms to the player's unique head topography and distributes pressure uniformly around the head.

Concussions are a growing issue in all levels of sport, with the most attention currently being paid to football at all levels of the game.

VICIS' ZERO1 uses a flexible outer shell over a layer of flexible columns, so when a blow is delivered, the outer layers deform, absorbing energy, then spring back while a stiff inner shell cradles the player's head. Because the flexible columns can move in all directions, the system is better at buffering off-center blows that cause the brain to rotate inside the skull, mitigating acceleration while still preventing catastrophic head trauma.

The ZERO1 will be commercially available by the second half of 2016, and has received commitments to use the helmet from several teams at every level of football.

(L to R): Troy Paluszcyk, Michel Tanguay, Mary Majer, Joe Del Rossi, Mike

Nagel

Vomaris Innovations, Inc.

Winning Technology: Procellera® Antimicrobial
Wound Dressing with Advanced Microcurrent
Technology®

Inventors: Jeffry Skiba, Larry Schneider

Engineers: Troy Paluszcyk, Joseph Del Rossi

Advanced Microcurrent Technology® (AMT) is a dressing for wound and incisional care which employs embedded microcell batteries which generate microcurrents in the presence of moisture. Procellera's goal is to mimic the body's own physiologic electrical signals to direct cell migration and re-epithelialization. It has demonstrated efficacy against a broad-spectrum of microbes including drug-resistant and biofilm-forming pathogens. This unique wound dressing creates an optimal environment for wound healing.

AMT is distributed as JumpStart™ Antimicrobial Wound Dressings exclusively by Arthrex, Inc. in the United States.

Over the past couple years there have been some very public reports on locker room-, playing field or equipment-acquired infections with antibiotic resistant microbes that pose significant threats to athletes.

AMT is a *non-pharmacologic* approach to broad-spectrum antimicrobial efficacy and is available in configurations designed specifically for the unique needs of orthopedic surgeons, team doctors/trainers, and their patients. AMT also stays in place and moves with joints, allowing patient/athletes unrestricted range of motion (ROM) and mobility so they can return to activity.

(L to R): Robin Young, Eric Dahlinger

ZipLine Medical

***Winning Technology:* Zip Surgical Skin Closure**

Inventors: Amir Belson, M.D., Eric Storne, MBA,
Eric T. Johnson, Robert R. Ragland, Phillip C.
Burke, Luke Clauson

Engineering Team: Kei Ichiryu, MS, Zach Kimura,
Alan Schaer, Daren Stewart, MS, Melissa
Guerrero, Jeremy Edinger, Emily Cullinan, Lori
Munoz, Julie Ridgeway, John Tighe, Eric Storne

The Zip® Surgical Skin Closure provides a non-invasive alternative to staples, sutures and glue for surgery and lacerations. It is used by surgeons (orthopedic, general, cardiac, ob/gyn, plastic/reconstructive, dermatology) and emergency department physicians, and because of the device's ease of use, no suturing skill is required so the closure task using the Zip device can be delegated to a Physician's Assistant or RN.

This Zip is applied to intact skin immediately surrounding a surgical incision, and is placed at the end of the procedure, when the skin layer is to be closed. It replaces conventional means of skin closure such as staples, sutures and glue. It utilizes a strong yet skin-friendly hydrocolloid adhesive that lasts for 14 days, and is easily removed. The incision is closed by sequentially tightening a series of ratcheting straps, similar to "zip-ties," to produce the desired incision closure and tension.

The Zip consists of biocompatible polymeric materials, including hydrocolloid adhesive, polyurethane monofilm, nylon injection-molded tensioning mechanism and polyester force-distributing plates. It is a single-use device and is provided sterile in a sealed pouch suitable for aseptic transfer to a sterile field.

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