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Journal of Special Operations Medicine

A Peer Reviewed Journal for SOF Medical Professionals



Dedicated to the Indomitable Spirit & Sacrifices of the SOF Medic

COVER

MEDCAP mission at a rural school built by the 17th Field Artillery Brigade outside Balad, Iraq. SF personnel supported pediatric care for over 60 elementary school students.

Photo provided by PFC Daniel McGarrah



The Journal of Special Operations Medicine is an authorized official quarterly publication of the United States Special Operations Command, MacDill Air Force Base, Florida. It is in no way associated with the civilian Special Operations Medical Association (SOMA). Our mission is to promote the professional development of Special Operations medical personnel by providing a forum for the examination of the latest advancements in medicine.

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From The Editor

We would like to welcome CAPT Frank Butler to both the USSOCOM-SG office as the new Command Surgeon, as well as the new Executive Editor of the JSOM.

To assure the JSOM continues to be available to all who find value in it, we need to comply with the intent of the current distribution rules governing this publication. There are several ways that you can now obtain the Journal of Special Operations Medicine (JSOM) you need to be aware of.

We have continued to send the JSOM to all our SOF units and the active editorial consultants without change. SOMA members now receive the JSOM as part of membership. We strongly recommend this avenue, for SOMA has become a very valuable CME effort as well as an annual gathering of SOF medical folks to share issues. Please note, if you are a SOMA member and are not receiving the subscription, you can contact SOMA through www.specialoperationsmedicalassociation.org.

For JSOM readers who do not meet the above criteria, we have arranged for the JSOM to be available as a paid subscription from the Superintendent of Documents, U.S. Government Printing Office, for only \$30 a year. Thank you for understanding our need to change the distribution of the JSOM in order to be compliance with current distribution rules.

Don't forget, we are online!!! Thanks to the cooperation and efforts of the Joint Special Operations University, the JSOM is available online to all DOD at <http://www.hurlburt.af.mil/jsou>. There are instructions on their homepage as to how to enter their medical link and access issues of the JSOM. From this site, you can link straight to the Government Printing Office to subscribe to the JSOM.

We are in our fourth year of publication and continue to need your article submissions and photos. They are what keep us going and they're what makes this journal so unique. It is a sharing of your lives and missions as you go forth as instruments of national foreign policy. We can't do it without your input; you are what the journal is all about!

The JSOM remains an excellent and righteous tool that spans all the SOF services and shares medical information and experiences unique to this community. The JSOM has continued to survive because of generous but time-consuming contributions sent in by clinicians, researchers, and former medics from all the Services who were SOF-qualified and/or who served with SOF units. We need your help! Get published in a peer-review journal NOW! See General Rules of Submission in the back of the journal. We are always looking for SOF-related articles from current and/or former SOF medical veterans. We need you to submit articles that deal with trauma, orthopedic injuries, infectious disease processes, and/or environment and wilderness medicine. More than anything, we need you to write CME articles. Help keep each other current in your re-licensure requirements. Don't forget to send photos to accompany the articles or alone to be included in the photo gallery associated with medical guys and/or training. If you have contributions great or small... send them our way. Our E-mail is: JSOM@socom.mil.

Don't forget to do your CMEs!!!! The JSOM's CMEs are for our SF medics, PJs, and SEAL corpsmen as well as physicians, PAs, and nurses. We offer them to you in coordination with the Uniformed Services University of Health Sciences (USUHS).

Enjoy this edition of the journal, send us your feedback, and get those article submissions in to us!

mdd

From the Surgeon



Frank Butler, MD
CAPT, USN
Command Surgeon
US Special Operations Command

April 2004

So - I've been in the office three days now. The boxes are mostly unpacked and one of these days I'll get started on my command check-in sheet. Thanks to the staff in the USSOCOM Surgeon's office for the warm reception they've provided and their ongoing efforts to bring me up to speed on all of the issues they're working.

I'd like to take this opportunity to thank the outgoing Command Surgeon, Col Dave Hammer, for his many contributions to SOF medicine over the years and to recall some of the successes that the staff achieved under his leadership. A medical planning support cell for the Center for Special Operations (CSO) has been established to ensure that missions run by USSOCOM (as a supported Combatant Commander) have the medical influence on operational planning that they need. Personnel from this office are available to the CSO on a 24-hour basis to provide assistance. The Command endorsed the establishment of a Special Operations Paramedic program defined by the SOF community, allowing our training to more precisely meet the medical requirements of our units. The USSOCOM Surgeon's office has helped coordinate the placement of medical planners on the staff of the theater Special Operations commanders, assisting those commands with medical support for their operations. The *Journal of Special Operations Medicine* continues to provide a central voice for the Special Operations medical community, and the quality of this excellent publication continues to improve. USSOCOM took a leadership role in the development and fielding of hemostatic dressings in the US military, early in the initial proof-of-concept studies at the Army Institute for Surgical Research and later, working with the Army Medical Research and Materiel Command to obtain funding to procure these lifesaving dressings for our warfighters. Last, Col Hammer was a strong supporter of the USSOCOM/BUMED combined effort to establish a standing Committee on Tactical Combat Casualty Care (TCCC), which is now providing updated guidelines in TCCC for our deploying combat medical personnel. These guidelines, published in the Prehospital Trauma Life Support Manual, are specifically designed for use on the battlefield and have the endorsement of the National Registry of Emergency Medical Technicians and the American College of Surgeons Committee on Trauma.

This is indeed a rich legacy and Col Hammer's leadership has left Special Operations medicine more mission-ready than ever before. Thanks, Dave. Fair winds and following seas to you and Janice as you leave for your new career as Director of Clinical Medicine for the Peace Corps.

We also say a reluctant good-bye to USSOCOM's Senior Enlisted Medical Advisor, Master Sergeant Mike Brochu. MSG Brochu has been a strong voice for the SOF enlisted medical commu-

nity for the last three years. He has re-energized the Joint Medical Enlisted Advisory Council during his tour and has been a driving force behind the establishment of the Special Operations Emergency Medical Services program. He has served the SOF medical community as an officer in the Special Operations Medical Association and was instrumental in organizing the SOMA challenge, which was a highlight of the last two years meetings. He has kept the lines of communication to the SOF combat medical community open through his involvement in the *MedTruth* program, ensuring that the office has a direct pipeline to those who can let us know what's really happening downrange. MSG Brochu will retire from active duty and hopefully will not go far. He has applied for a contract position right here at MacDill where we can still tap into his expertise. We're going to miss his wisdom and positive attitude, as well as his joyful serenading in the office. Thanks for all you've done, Mike.

MSG Brochu's replacement will arrive in May. We welcome Master Chief (SEAL) Gary Welt to the office. Master Chief Welt is one of the most respected leaders in the Naval Special Warfare Command corpsman community. He comes to this office having just finished a tour as the Senior Enlisted Advisor at the Joint Special Operations Medical Training Center. Master Chief Welt will continue to ensure that SOF combat medics, corpsmen, and PJs have a powerful voice in the Command Surgeon's office.

I look forward to three more years of working with the finest operational medicine community in the world and to working with each of you who make it so.

God bless you and God bless America



SENIOR ENLISTED MEDICAL ADVISOR (SEMA), MSG
Michael A. Brochu

From the ROAD DOG in the BIG HOUSE

By the time you read this journal I will have been replaced by HMCM Gary Welt. Some of you will remember him from his days as the Senior Navy Instructor at the JSOMTC. He is a shaker and mover and I feel that he will continue to try and make SOF health care providers better than ever. I will once more try to make the SGM list this June. The SF Branch would like me to go back to 3rd SFG(A) at Fort Bragg around the Sept 04 time frame. I will be retiring in lieu of another PCS. I have officially put in the paperwork for a retirement date of 1 Nov 04.

I would like to use this last letter to try and sum up what I feel are my end of tour accomplishments. It has taken some time to realize that change is a long hard road. On the teams, you see the need for change and you take action to effect that change. Here at the HQ where the change can be made, you are tied by the bureaucratic process. That makes the change process VERY slow. I will say after my time here, the slowness may be a good thing in disguise. People rotate through this HQ fast, which could weaken the continuity, but thank God for the contracted and reserve folks within the command as they are the glue that keep the command together. If change was affected with every active duty change-over we would have no solid foundation.

I have just given the newcomers brief to incoming personnel of USSOCOM and it brings to mind the road this office has traveled in the last three years. To start, the Command Surgeon's office has gone from being a sick call clinic with some medical people to a true medical operations special staff that has an outstanding clinic. We have medical input to all operations involving SOF operators which is a great leap from years past. We have placed medical planners into all the theater special operations commands (TSOCs) to provide their medical knowledge to all the TSOC operations. We have made advancements in the treatment of battlefield injuries by looking at present and future technologies and making the money available. For about fifty years the medical treatment on the battlefield has been the same. We have used cotton dressings, pressure, and tourniquets. No major changes have been adopted up until now. The Tactical Combat Casualty Care panel has met and has made recommendations and now we at the command level are implementing those changes. As in operational issues, SOF is the spear; now in the medical arena, SOF medicine will lead the way. This change comes slow but will result in the betterment of the community.

I can say with a happy heart that I had a little part in that transition and I look for the future of SOF medicine to be ground breaking. It has been my joy to serve you as you have been serving. Thank you for your support and I will see you on the battlefield in the short months ahead. SCOUTS OUT!!!!

Long range dates for future JMEAC: All enlisted folks are invited to these meetings. That is the main reason I select sites around the country. It gives ya'll a chance to be a participant instead of just being in the back of the patrol wondering where the next patrol base is! You are the blood of the Joint Medical Enlisted Advisory Committee. Link up with your SEMA and tell him you want to attend. We can only speak for you if we have your feedback.

14 – 15 Jul 04 AFSOC Host (Hurlburt Field)

20 – 21 Oct 04 USASOC Host (FBNC)

If you have suggestions, concerns, and/or recommendations for the JMEAC, pass them along to your SEMA and it will be addressed. The only thing that is required is that you "SEND IT"

Meet Your JSOM Staff

EXECUTIVE EDITOR

Frank K. Butler, MD
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CAPT Butler graduated from Basic Underwater Demolition/SEAL training in 1972 as a member of Class 64 and subsequently served as a platoon commander in both Underwater Demolition Team Twelve and SEAL Team One. After attending medical school at the Medical College of Georgia, he did his internship in Family Practice at Naval Hospital Jacksonville. CAPT Butler spent 5 years as a diving medical research officer at the Navy Experimental Diving Unit in Panama City, where he helped to develop many of the diving techniques and procedures used by the Navy SEAL teams today. He then did a residency in

Ophthalmology at the National Naval Medical Center in Bethesda, where he was the Chief Resident in 1989. CAPT Butler was then assigned to the Naval Hospital Pensacola where he was Chief of Ophthalmology from 1990 to 1994. He assumed his current duties as Director of Biomedical Research for the Naval Special Warfare Command in 1990 as well.

MANAGING EDITOR

Michelle D. DuGuay, RN
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Maj DuGuay joined the Army Reserve in 1987 and served as a nurse in a Combat Support Hospital unit for three years before switching services in 1990 to become an Air Force C-130 Flight Nurse. She is currently an IMA reservist attached to the SOCOM/SG office. Maj DuGuay has a Bachelors in Nursing and a Masters in Business Administration/Management. Her career includes being a flight nurse in both the military and private sector, 15 years of clinical experience in emergency and critical care nursing as well as being an EMT and a legal nurse consultant. She also served as the military liaison to her

Disaster Medical Assistance Team (DMAT.) Prior to the SG office, Maj DuGuay's experience at USSOCOM includes an assignment in the Center for Force Structure, Resources, Requirements, and Strategic Assessments.

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“The Father of the Green Berets”



USASOC



Rocky Farr, MD
COL, USA
Command Surgeon

Firstly, sincere congratulations to my good friend and fine naval officer, Captain Frank Butler, as he moves to the Surgeon's position in Tampa. A welcome assignment for our community and the war effort.

Summer is coming and that means personnel moving season. I have finished, I hope, all the assignment issues, and am again very happy with the quality of officers applying for service in Army Special Operations Forces (ARSOF) as medical officers, physician assistants, medical service corps officers, physical therapists, veterinarians, dentists, and the myriad of other Army Medical Department (AMEDD) Area of Concentration (AOCs) in our US Army Civil Affairs and Psychological Operations Command (USACAPOC) reserve units.

Several fine Soldiers to highlight. Major Hal Abner retires from the USASOC Surgeon's office this summer after an illustrious twenty-year career as the Medical Service Corps AOC 67J Medevac Aviator. Hal has been the doctrinal expert here as he was at the AMEDD Center and School when I first met him. He will be missed. Major Ric Ong, 3rd Battalion, 10th Special Forces Group (Airborne), is not leaving, but in March of this year he became the first medical officer to successfully complete the Special Forces Qualification Course in, by my guess, about fourteen years. The photograph is of our newly christened Green Beret. Major Dunn and Lieutenants Shelley and Goins from the USACAPOC medical section are demobilizing this spring and summer. They have made a real difference as we have moved USACAPOC units out the door to war. Thank



MAJ Ric Ong

you to them for outstanding work.

Our excellent preventive medicine officer, Major Arthur Cajigal, leaves us for Command and General Staff College this summer. Arthur has about conquered malaria but is still working on leishmaniasis as he leaves. The only drug for leishmaniasis is personal protective measures!

There is other moving turmoil in the Surgeon's office, but not bad, so we plan to not missing a beat and supporting everyone out there in the trenches. Major Sully continues to push logistics forward and Mr. Marak continues to look for new items to type classify to give to Major Sully. We are looking at significant changes and increases in force structure.

I would like to turn this column over to my deputy, Lieutenant Colonel Frank Newton, to discuss a clinical issue:

Rapid HIV Testing for SOF: An Important New Tool

The story is familiar to many of you. A high value target is identified. Intelligence gathering is complete, and the target is neutralized and brought in for identification. The mission was a success, and went down without a hitch, almost. This Islamic radical had a prosthetic leg that had been shattered by close contact with an advanced weapons system. Sharp fragments of plastic sliced through the gloved hand and into the flesh of the operator retrieving the target.

The United Nations AIDS Program and the World Health Organization estimate there are 42 million people infected with HIV worldwide, and an estimated 5 million new cases each year. Of these numbers, 26.6 million of those infected are in Sub-Saharan Africa. Exposure to HIV will continue to be an important force protection issue.

When a significant exposure occurs and mission permits, the indigenous or combatant's blood (the source) should be tested for HIV antibodies. Fortunately, the ability to rapidly test blood at the point of contact is now possible with OraQuick®. The decision to begin or withhold anti-viral treatment can now be made with greater certainty. Emphasis on early treatment, within two hours of exposure, remains an important goal.

Confirmation testing with Western Blot or Immunofluorescent Assay (IFA) should be done when practical. This usually requires an Echelon IV MTF. Additionally, follow-up testing should be done at four weeks, three months, and six months post-exposure. This should be done even if anti-viral treatment is given.

The FDA licensed OraQuick®, a rapid HIV test kit, in October 2002. Using a drop of blood from a finger stick, this Clinical Laboratory Improvement Amendments (CLIA) waived test can be completed in 20 minutes. OraQuick® is a highly accurate test with a sensitivity of 99.9% and a specificity of 100%. A box of 25 individual test kits weighs 2 lbs and costs \$275.00. The NSN # for OraQuick® is 6550-01-502-6241. It is stable at room temperature (2° – 27° Celsius).

The ability to rapidly identify an HIV+ exposure and take appropriate action will help us sustain the health of our comrades. There is no higher calling.



NAVSPECWARCOM



Edward Woods, MD
CAPT, USN
Command Surgeon

I would like to introduce Lieutenant Jason J. Holmes as the new Naval Special Warfare Force Medical Planner as of Feb 04. His military career began in 1982 when he served as a Hospital Corpsman and lab technician during a four year enlistment including tours with Naval Hospital Camp Lejeune, NC; Branch Clinic La Maddalena, Sardinia; and Naval Hospital Philadelphia, PA. Following discharge, he completed a BS in Microbiology at the University of South Florida in Tampa. After working in the toxicology field for two years, he attended graduate school and earned a Masters degree in Health Administration from the Medical University of South Carolina in Charleston in 1994. After working with the American Red Cross for two years, he then re-entered the Navy in the summer of 1996 as a LTJG Health Care Administrator in the Medical Service Corps. He successfully completed Officer Indoctrination School (OIS) serving as Company Officer in charge of 44 staff officers in various disciplines. Following OIS, he went overseas to serve as the Executive Assistant to three Directors for Surgery, Medicine, and Ancillary Services and as the TRICARE Project Officer at US Naval Hospital, Okinawa, Japan from 1996 to 1998. In March of 1998 he went to sea as the Medical Admin Officer on board the USS KITTY HAWK (CV-63) from 1998 to 2000, deploying to the Persian Gulf in support of Operation SOUTHERN WATCH. After his sea tour he was selected as the Joint Staff Navy Intern to work in the Pentagon's J4 Medical Readiness Division for one year. He was then assigned with the US Northern Command, Joint Regional Medical Planning and Operations Division, Southwest Branch at Fort Sam Houston in San Antonio, TX from 2001 to 2004. He is currently serving as the Force Medical Planner, Naval Special Warfare Command (NSW), Coronado, CA. Lieutenant Holmes is a Diplomat in the American College of Healthcare Executives and a Surface Warfare Medical Department Officer.



Lieutenant Holmes will play an integral role as the NSW Force Medical Planner and advisor to the Command Surgeon. As a medical planner, he will work with the USSOCOM Surgeon's staff in finalizing war plans. He will provide medical intelligence to subordinate commands to assess environmental risks to deploying units. Lieutenant Holmes will also liaise with outside medical groups in the areas of research and development examining new technologies to improve medical readiness. Through his frequent consultations with N931 and USSOCOM, he will function as the Preventive Medicine point

of contact for NSW. He will monitor message traffic for NSW medical relevance, forwarding information to subordinate units as necessary. In addition, he will also work with N3 on any medical issues arising from the Joint Quarterly Readiness Review (JQRR).

Some of the ongoing projects he will be involved with include:

1. **Physician Assistant (PA) Integration:** A program adding experienced PAs to NSW SEAL Teams and Units in conjunction with reorganizing NSW Medical Departments. There are eight teams and having a PA at each would add a significant level of training, personnel readiness, and deployed health maintenance. Lieutenant Holmes will work with the PA Detailer, Specialty Leader, and BUMED on programming for these billets.
2. **Shock Mitigation:** An ongoing study measuring the effects of shock and vibration impulses from High Speed Performance Boats (HSPBs), which may cause injury to Special Boat Unit (SBU) operators. NSW Medical has a keen interest in the outcome of this study and the efforts to mitigate injuries.
3. **Special Warfare Information Medical Program (SWIMP):** An integrated web-based surveillance system used to track injuries and illnesses. This will allow NSW to intervene early to prevent recurrence and mitigate chronic injuries. The IT goal is to provide a global capability linking information databases and integration centers that are accessible anywhere, and anytime.
4. **Sea Warrior:** The Sea Warrior program implements our Navy's commitment to the growth and development of our people. Within NSW we will create a single SEAL rate to implement Sea Warrior. The SEAL/SWCC Medic will be a certification and qualification within each respective rating.
5. **Sustainment Training:** Re-certifying our SEAL Corpsmen is a top priority. Lieutenant Holmes will work closely with the Joint Special Operations Medical Training Command (JSOMTC) to secure seats for SEAL Corpsmen for sustainment training.

COMPONENT SURGEON

AFSOC



Dan Wyman, MD
Col, USAF
Command Surgeon

It seems like one constant blur since SOMA. Today's Air Force is marked by its incredible OPSTEM-PO with Special Operations Command leading the way. And, it is our Air Force Special Ops medics (pararescuemen, OSM medical elements, Mobile Field Surgical Team [MFST], and Critical Care Air Transport Team [CCATTs]) that ensure our warriors are fit to fight while enhancing performance, preventing casualties, and restoring health worldwide.

Shortly after the beginning of 2004, we held our first AFSOC-sponsored Pararescue Medical Operations Advisory Board (PJ MOAB). We had PJ and Flight Surgeon representation from SOF, CSAR, Air Staff, and from multiple MAJCOMs. Lt Gen Hester opened the conference highlighting the interoperability of SOF and CSAR pararescuemen. With the merger of Air Force SOF and CSAR under AFSOC, it is imperative that while each subset of PJs (SOF vs. CSAR) or even each wing/unit develops operationally relevant specific skills, we must ensure that all PJs possess equivalent medical skill-sets. On the horizon for the PJ MOAB will be a complete review of the Medical Handbook, more comprehensive documentation of medical training and certification requirements (What makes a PJ medically "mission ready"?), and policy/procedures to ensure timely physician review of medical mission reports.

Speaking of the SOF/CSAR merger, we have developed and registered a CSAR Medical Element (CSARME) UTC (FFQER) patterned after the SOFME UTC (FFQEK). This personnel UTC will consist of a flight surgeon and two medical technicians (4Ns) and will be outfitted with the same equipment UTCs as SOFMEs, particularly the CASEVAC equipment sets. "Interoperability" is a cornerstone to our medical mission success . . . whether between SOF medics from USSOCOM's component services or within AFSOC between SOF and CSAR medics.

The Air Force Medical Services is working hard to develop a 4N career field AFSC shred out for IDMT-qualified medical technicians. Currently, our personnel folks have no visibility of IDMT qualification when assigning medical technicians. Thus, we must either seek out IDMTs to volunteer for assignment into AFSOC or spend significant time and money training up "slick" 4Ns to our standards. With the development of the IDMT 4N shred out (hopefully by Nov 04) AFPC will be able to assign qualified IDMTs to our SOFME positions . . . cutting down the training time to get them SOF/SOCM certified and ready to deploy.

As I noted at the beginning of this column, you all have been extremely busy conducting medical operations across the globe. I would like to take this opportunity to highlight and thank our SOF MFST and CCATT teams. The MFST is a 5-person team (general surgeon, orthopedic surgeon, emergency physician, anesthesiologist, and operating room technician) capable of resuscitative surgery and advanced trauma life support for 20 casualties for up to 48 hours of continuous operation. The CCATT is a three-person team (intensive care physician, critical care nurse, and cardiopulmonary technician) capable of critical care/casualty management of four stabilized (post-trauma/operative) patients aboard all SOF aircraft and other opportune evacuation platforms for up to 36 hours of continuous operation. Throughout OEF and OIF, these medics have deployed time and again (AFSOC only has two of each UTCs) in support of a variety of SOF operators and have saved lives.

Again, thanks to all for all the miraculous things you do, day in and day out, for the world's mightiest military and our great nation. May God Bless the United States!





LTC Will Schiek, MSC

It has been a very busy quarter here at SOCOM. OPTEMPO remains high with our forces deployed worldwide. Some changes in the Surgeon's office include the addition of a new command surgeon, CAPT (Dr.) Frank Butler, USN, and a new environmental science officer, MAJ Mike Salamy (USA). Also, I reported in the last journal that COL Heintz was retiring. Well, he was but now he's not. The Army asked him to stay on for another year. We look forward to providing continued service to our SOF components in any way possible.

The following article provided by 1LT Don McNeil (3d SFG) was written from a Special Forces Group perspective. His article is applicable to joint SOF across the spectrum of SOF missions. 1LT McNeil provides two important Internet URLs to help establish accounts and provide general medical logistics information. Because SOF does not have many assigned medical logisticians and no organic medical logistics units, this article is important for all SOF medics and everyone involved in medical logistics resupply. Do you know how to get your Class VIII resupply?

Conventional Class VIII System For an Unconventional War

First Lieutenant Donald J. McNeil

INTRODUCTION

Since the Global War on Terrorism began, the use of special operations units has been at an all time high. These units are gone for lengthy periods of time with little or no conventional support, yet require frequent resupply of all classes of materiel. In a mature theater of operations, most of this resupply will come from conventional units. The combat health logistician (CHL) must know how to support special operations units so they may effectively conduct their missions and provide world-class health-care on the battlefield. This article will guide the CHL through the procedures to establish a medical supply office and effectively support special operations with medical supplies and equipment during this turbulent time.

Can the conventional medical supply system support Army Special Forces (SF) in an unconventional war? The answer is, "Yes!"

To effectively support SF, a combat health logistician (CHL) must know his customer base. Army Special Forces conduct unconventional warfare operations that can include special reconnaissance, direct action, foreign internal defense, combat-

ing terrorism, civil affairs, psychological operations, information operations, and coalition support. Each of these operations has different class VIII (medical materiel) support requirements, described in Field Manual (FM) 8-43, *Combat Health Support for Army Special Operations Forces*. Forward-deployed SF elements conducting unconventional warfare can deplete class VIII supplies rapidly because the units are in a continuous combat operations environment.

CHLs must understand the need for resupply, both routine and emergency. In addition to supporting an SF group's forward operating bases (FOBs), operational detachment bravos (ODBs), or operational detachment alphas (ODAs), the CHL also may support a conventional unit such as a forward surgical team attached to the group (ODAs are Special Forces teams consisting of 12 members while an ODB provides command and control of the ODAs within a SF company.)

The CHL also should be familiar with the unit assemblage lists (UALs) – the unit's basic entitlement. The United States Army Medical Materiel Agency (USAMMA) Web site (www.usamma.army.mil) lists

UALs for all medical sets, kits, and outfits. The CHL can type in the unit identification code (UIC) and view all authorized UALs for his unit. He then can determine if his customers need to stock anything above and beyond what is listed in the UAL.

PREPARING FOR DEPLOYMENT

Predeployment preparation will save a lot of time and trouble downrange. The CHL should develop a comprehensive packing list that includes shelving for stocking supplies and a printer for receipts and reports. Nonexpendable and durable equipment and supplies should be accounted for on hand receipts before deploying. This will help the CHL update shortage annexes as shortages are filled, account for new equipment and supplies being used for missions, and provide justification for refit in the event of a combat loss. The CHL should ensure the unit has a derivative (deployed) Department of Defense address activity code (DODAAC). To ensure proper delivery of supplies, he also should make sure the “type address code” (TAC) reflects the unit’s deployment address.

The CHL may be able to use the Army/Air Force excess program to procure equipment and supplies at little or no cost. The U.S. Army Medical Materiel Center Europe (USAMMCE) Web site (www.pirmasens.amedd.army.mil) has a free issue catalog on the Theater Army Medical Management Information System Customer Assistance Module (TCAM), and the USAMMA Web site has a link for obtaining both Army and Air Force excess supplies and equipment. This is an economical way to fill shortages.

IN-THEATER PREPARATIONS

The CHL should meet with the single integrated medical logistics manager (SIMLM), which may be USAMMCE, a medical logistics battalion or company, or the installation medical supply activity (IMSA), to strengthen their working relationship. He should explore all transportation options to know what supply routes are available and how to get supplies in a timely manner. The CHL should become familiar with all class VIII support in theater in case he needs something quickly; he may not have to go all the way back to the SIMLM if he knows which assets are available in theater. The CHL should be familiar with the ordering system that the SIMLM uses and, if possible, familiarize his customers with those systems to expedite ordering.

The CHL should develop reorder lists for individual units. These lists should capture the class VIII authorized by the UALs as well as nonstandard class VIII that is not authorized by UALs ordered frequently for that particular theater. SF-unique, nonstandard medical items may not always be available. FM 8–55, Planning for Health Service Support, states that conservation of supplies and equipment always should be a priority. However, under combat conditions, conservation of medical supplies becomes particularly critical. An austere environment requires that clinicians practice supply discipline; they must be prepared to work with and be supported by generic supplies. Lack of physician-preferred brands does not constitute a patient risk.

SUPPLY DISCIPLINE

Since poor supply discipline may strain the health service logistics system and cause a risk to patients, supply discipline must be a command priority. UALs must be updated, maintained, and followed. Clinicians must be familiar with their UALs. Providing combat logistics requires the ability to work with available resources.

PUSH packages. The CHL must develop predetermined emergency resupply and trauma packages for teams and supported units.

Standing operating procedures. Before deploying, the CHL should develop both internal and external standing operating procedures (SOPs) appropriate for both garrison and field environments. The external SOP should tell customers how the unit operates, its operating hours, class VIII requisitioning procedures, and the documentation required, such as signature cards and commanders orders. Customers must be told which shipment method will be used for their supplies—either push or pull. If the mission requires the CHL to push pallets of supplies to customers, he should know how to palletize and operate a forklift, and be hazardous-materials certified before he deploys, as this will reduce the need to rely on outside agencies.

Stocking system. Develop a supply stocking system. Base it either on the class of drug or the national stock number (NSN). Army Regulation 40–61, Medical Logistics Policies and Procedures, suggests stocking by NSN, but whatever method makes the operation run efficiently can be used. An inventory must be developed and kept updated.

Narcotics. Narcotics must be secured properly. A disinterested party (E–7 or above) on orders

from the commander must inventory the narcotics monthly. A signature card (DA Form 1687) signed by the commander must be on file for those who sign for narcotics. The CHL should develop a memorandum of agreement stating the responsibilities of the individual drawing the narcotics, such as storage requirements, turn-in procedures, and documentation of use.

Stockage lists. Authorized stockage lists should be based on UALs and customer needs. When the unit is forward deployed, it is okay to have stocks on the shelves; combat health logistics is not just-in-time logistics. A CHL does not have the luxury of a 24- to 72-hour turn around time using a prime vendor, as the medical logistician does in garrison. To avoid becoming a crisis manager, the CHL should establish realistic reorder points to ensure he will not run out of supplies. Requisition objectives should be monitored and adjusted as needed.

Medical equipment. The CHL must know his support chain for medical maintenance support because medical equipment must be serviced through that chain. He also should know the procedures for borrowing equipment from the Medical Standby Equipment Program (MEDSTEP) while unit equipment is being serviced or repaired.

REDEPLOYMENT AND RECOVERY

The key to a successful redeployment and recovery is knowing what materials and equipment are being shipped and having proper documentation for losses and/or shortages. The CHL should inventory his stocks before redeployment so he knows what is missing and can attempt to fill shortages before shipping. Accountability is paramount. Before leaving the deployment area, the CHL should

have all paperwork documenting losses, such as memorandums for record for destroyed or lost narcotics, statements of damage to equipment, and reports of survey. Since a unit sometimes redeploys with short notice, inventory and shortage annexes are vital to redeployment and recovery.

The CHL should conduct a thorough after-action review. Documenting facts will enable the CHL to maintain acceptable standards and correct mistakes or shortfalls encountered during the deployment. The after-action review should include a compilation of comments from the CHL, his coworkers, customers, and the SIMLM.

Although the face of war is changing, the current class VIII system will support it. Good logistics practices—knowing the customer and maintaining good supply discipline—can help the CHL succeed in supporting troops in an unconventional war. ALOG

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The Emerging Civil/Military Interface: The Applicability of the Integrated Force Health Protection Course to Military Special Operations Medicine

Theodore Redman, MSC

INTRODUCTION:

The Integrated Force Health Protection program teaches basic aspects of tactical emergency medical support to combined audiences of civilian medical providers, law enforcement special weapons and tactics (SWAT) teams, and military medical personnel. Many aspects of this course are directly applicable to military operations. It provides new tools for the military responder, and an understanding of the civilian medicine and law enforcement roles in response to Homeland Security contingencies.

OVERVIEW

In the months since September 11, 2001, the US military has deployed for aggressive operations against terrorism both abroad and at home. The military has arrested suspected criminals in Somalia, Bosnia, Iraq, and Afghanistan. The UN has established a war crimes tribunal and declared its jurisdiction over war crimes, genocide, or crimes against humanity occurring anywhere in the world. Additionally, there is debate in Congress about modifying the Posse Comitatus Act to allow military support operations on US soil, especially for incidents involving weapons of mass destruction.

These recent events speak to an increasing civil/military interface. US soldiers may need more instruction in proper law enforcement procedures if they continue to be tasked with missions such as these. As medical professionals, we could benefit from additional instruction on the medical support of tactical law enforcement operations and apply that instruction in our own military operations.

Toward that end, the Integrated Force Health Protection (IFHP) course is a DoD funded, weeklong course of didactic instruction and practical exercises. The course is run by the Casualty Care Research Center. IFHP is the descendant of the Emergency Medical Technician – Tactical (EMT-T) school, which has a proven track record and support from both professional law enforcement and physician associations.¹ The course offers instruction in medical planning, basic special weapons and tactics (SWAT),

officer rescue, medicine across the barricade, chemical agents and decontamination, preventive medicine, clinical forensic science, and many other areas. The students have at least an EMT-B level of medical training, although most are paramedics and several emergency medicine physicians attend each course.

ANALYSIS

Instruction in chemical agent decontamination is one of the strongest points of the program. Weapons of mass destruction have taken a more prominent place in everyone's mind since 9/11 and the anthrax attacks in the US. This course provides an overview of the threats and the different types of chemical protective suits available, including both military and civilian models. Personnel attending the course are taught to perform chemical decontamination ("decon"). Students are required to perform decon exactly as they would if the patient were really contaminated. The patient has to strip completely if he can, or if not, the students have to do it for the patient. Once naked, the patient is washed down with a water sprayer using proper technique. The patient then has to use soap, water, and a sponge to wash himself down. If unable, the student must wash the patient with the sponge and soapy water. The patient is then led or carried on a litter into the clean zone and put into a protective suit.

Students are also taught hasty decon techniques to use before, or possibly in place of, formal

decontamination protocols. Hasty decon is easy to learn and is accomplished with a bucket, sponges, Joy® liquid soap, a portable water heater/sprayer, and a water source. The water source could be a garden hose, fire hydrant, or small pond, since this particular water sprayer has its own drafting apparatus. The water sprayer also has a heating element to heat the water for use in decontamination in cold weather, so as to prevent hypothermia. *This method of hasty decon could prove to be a significant benefit to small units that do not have access to regular decontamination units.*

During my four years as a medic in the Rangers, I don't recall ever performing complete chemical decontamination on chemical casualties as well as I did at this course. In the Rangers, we trained in MOPP suits, masks, and chemical protective undergarments, but at the end of the exercise, we simply took them off. The logical extension of decontaminating prior to taking off the protective gear was not performed. In essence, we were not training the way we would be fighting. This may not be the case at present, but it may still be an area for improvement.

As military special operations continue to be tasked with operations other than war, the special operations forces may find themselves being called



Students discussing tactics with instructor (in red shirt).

upon to arrest lawbreakers, war criminals, or perform other traditionally civil duties. Students are taught forensics, evidence collection techniques, and other domestic considerations that may not have been evident to the military special operations medic. For instance, use of a two-layer perimeter during operations is taught: the outer perimeter keeps civilians out, the inner perimeter contains the incident or keeps the suspect from escaping, and the middle area is for official responders to freely move about. Classes in properly searching and handcuffing a suspect were also helpful. These are better techniques than the 2-3 man "bum rush" takedown and flex cuffing that this author was taught as a private.

In military close quarters battle (CQB), the tactic of "leading with bullets" is perfectly acceptable, even encouraged. Almost all room entries are dynamic in nature. On the law enforcement side, stealthy room entries seem to be the preferred method. The reasons behind this method are that the SWAT team may encounter an innocent bystander and that each officer is responsible for every bullet he fires. These considerations tend to limit the use of explosive breaching and the liberal use of gunfire. Stealth entries are characterized by slow, deliberate movement, use of mirrors, ballistic shields while moving, noise and light discipline,



One student is medically assessing a wounded suspect while others cover him.



Military and law enforcement students in training, preparing to assault a hostage-taker in a police car who has a wounded officer as a hostage.

and systematic searches. The IFHP offers several practical exercises in CQB medical support, centering around a stealthy room clearing approach. Proficiency in this area provides another tool for the special operations medic to help accomplish the overall mission.

Tactical patient survey and patient assessment during hours of limited visibility with no NODs is an important course feature. To be sure, as special operations medics, we were all well taught in primary and secondary surveys and trauma management, but it is helpful to go over that again occasionally and to learn different techniques. For instance, during hours of darkness, the IFHP course teaches the provider to quickly search the unknown patient for weapons while at the same time assessing for exsanguinating hemorrhage, breathing, and airway. This is not your



Students at the IFHP come from Federal, state, and local law enforcement agencies, as well as the military.

standard ATLS. The thought behind this teaching is to immediately disarm any enemy wounded and to remove weapons from friendlies as they may have an altered level of consciousness and may regard the provider as an enemy soldier.

The course also features topics in preventive medicine. In my experience, short-term preventive medicine (PM) is virtually ignored and longer-term missions are an afterthought. As we all know, the greatest source of casualties in wartime is not due to trauma, but rather due to disease and non-battle injury (DNBI). The IFHP course doesn't teach anything different in preventive medicine, but it is beneficial in the sense that PM teaching is repeated and hopefully will sink in and receive more attention in mission planning and operations.

On the historical level, there are insights and lessons learned from major incidents here in the US and abroad. Personnel who provided medical support to operations such as the Ruby Ridge standoff, the Branch Davidian compound siege in Waco, the embassy bombings in Africa, World Trade Center and Pentagon attacks, and several other lesser known incidents, offer their lessons learned and share ideas on how things might have gone better. These lessons learned can be fairly easily adapted to military medical operations, so it is worthwhile to hear what the instructors have to say about these operations.

One area of the course that conflicts with military convention deals with minimizing the effects of booby-traps. The syllabus offers the following: "If you capture a suspect in an area, have him precede you into the area under investigation. He will bypass traps, or by his actions reveal their location."² This may be acceptable in civilian law enforcement, but it is completely against the Geneva Convention as one is supposed to safeguard prisoners.³ The instructor for this class did point out that it was against the Convention and those students who were in the military were not to follow that advice in the syllabus. As a real-world correlation, there were recent reports of the Israeli forces using this technique during the recent fighting in the town of Jenin, which led to the UN calling for an investigation after the battle.

There were areas of the course that were less valuable to the military students -- they covered material that should be well known to the special operations medics and tactical leaders. These were classes about the health of the unit being a command responsibility, and liability coverage. These classes, while thought provoking, were much more important to our civilian counterparts than to military special operations.

SUMMARY

This course is best seen as complementary to the training and teaching that the special operations medic already possesses. The student will definitely learn new tactics and techniques to do things that he already knows how to perform. The student will gain an appreciation for tactical emergency medical support for civilian law enforcement and domestic counterterrorism operations. In addition to special operations medics and physicians, others who might benefit from this course are conventional 91W medics, physicians, and military policemen with combat lifesaver or EMT training.



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Editor's Note: *The above article reflects the opinion of the author and should not be construed to reflect the official opinion of the Department of Defense, United States Army, the Uniformed Services University of Health Sciences, or the Casualty Care Research Center. For further information on classes available, please contact Joshua Vayer at the Casualty Care Research Center.*

REFERENCES

1. Emergency Medical Technician-Tactical Provider Program Student manual, p.3.
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3. Geneva Convention Relative to the Treatment of Prisoners of War. Signed at Geneva, 12 August 1949. Articles 12-23.



Bob Clayton, SVERDRUP

USSOCOM Biomedical Research and Development Update

The USSOCOM Biomedical Initiatives Steering Committee (BISC) held the second FY04 meeting at the Naval Special Warfare Command in March. Program planning and solicitation for FY05 new start research projects were the primary focus of the meeting. CAPT Frank K. Butler, a plank holder in the BISC, is now the USSOCOM Command Surgeon. His new position also carries the title of BISC Chairman. I would like to thank Col David Hammer for his support and leadership over the past three years. During his tenure, the BISC has accomplished a lot and has maintained its focus on the medical and physiological needs of the Special Operations community. The BISC has a very limited funding line but some of the "creative" financing or leveraging of other DOD programs has provided us a lot of bang for our buck.

One of the key elements of BISC research is to seek or research topics that have an operational impact on and enhance our ability to sustain and preserve the warrior while at the same time can be applied or transitioned into conventional forces. At times, this is not an easy task as the skill levels and application of trauma management in SOF is different than those of a conventional medic's scope of practice. Trauma treatment, far forward life support capabilities, sustaining or enhancing performance, training, and modern technologies that can be used at the lowest echelon are the thrust areas that the BISC deem to be the most important.

Last year, the BISC adjusted the program priorities to address emerging issues that resulted from lessons learned in the Global War on Terrorism (GWOT). The Component Surgeons and the JSOMTC are adjusting to or facilitating those changes as rapidly as possible. Gaps such as new device training and in-time training are being assessed and addressed. Technology updates and training materials are being distributed or are in the

process of being developed. The Components are or have recently conducted reviews of the adequacy of the medical sets, the authorized allowances, and tables of issue. Each medic/care provider has a voice in this process. Remember, change is good, but change takes time. Did I also mention change takes money, lots of money? The DOD, USSOCOM, and the Components just started the FY06 to FY11 POM cycle. Budget planning is a long and drawn out process. As we are trying to modernize our medical capabilities with long range forecasting, we are also faced with maintaining medical doctrine that can support the GWOT. In medicine, technology either changes rapidly or what looks like rapid change gets bogged down because of, and justifiably so, FDA regulations. I mention this not to criticize any regulatory organization but to highlight the fact that it is hard to forecast a five year funding cycle when the development cycle can either be very short or extremely long; no happy medium. This process creates a degree of or a sense of a lack of urgency, especially for those of you that have gone out or are getting ready to go out the door and perform your mission. The USSOCOM BISC and the Medical Technology program are investigating ways to expedite this process. The FDA has expedited several devices that have been used in support of our missions. Funding lines are being requested to provide an initial operational capability. This action will allow for the introduction of new devices and give the Components time to forecast or re-prioritize their out-year funding to sustain those capabilities. Time will tell.

Until we have entered a perfect world, keep your powder dry, shoot straight, and keep your skills honed. Do me a favor and look to your teammate, shipmate, or buddy on both your right and left. Are his lifesaving skills up to your standards? Train hard.

Achilles' Tendon Injuries: An Overview

Rick Hammesfahr, MD

ABSTRACT

Achilles' tendon injuries are among the most common sports and overuse injuries. Accurate diagnosis is essential to correct treatment for these injuries. This article provides an overview of the diagnosis and treatment of Achilles' tendonitis and Achilles' tendon ruptures.

FINANCIAL DISCLOSURE: Dr. Rick Hammesfahr has indicated that, within the past two years, he has had no significant financial relationship with a commercial entity whose products/services are related to the subject matter of the topic he will be addressing or a commercial supporter of this educational activity.

OBJECTIVES

1. Distinguish between an Achilles' tendon rupture and Achilles' tendonitis.
2. Discuss Achilles' tendon injuries.
3. Explain how accurate diagnosis is essential to the implementation of the correct treatment for this group of injuries.
4. Discuss the diagnosis and treatment of Achilles' tendonitis and Achilles' tendon ruptures.

CME: This activity has been planned and implemented in accordance with the essential areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through joint sponsorship of USUHS and the Journal of Special Operations Medicine. USUHS is accredited by the ACCME to provide continuing medical education for physicians. USUHS designates completion of this article and test **1 CME and 1.2 CNE**. Test questions are on page 51. Please complete the answer sheet on page 53 and mail or fax it to us.

ANATOMY

The Achilles' tendon is the tough fibrous tissue that connects the calf muscle (gastrocnemius) to the heel bone (calcaneus). (Figure 1) This tendon is easily palpable just deep to the skin, inserting posterior to the ankle. As with most tendons, this tendon may be injured, causing one of the most common overuse injuries in sports activity.^{1,2} The probability of injury increases with tight heel cords (gastrocnemius-Achilles' complex), foot malalignment problems, recent changes in running surface or shoes, sudden increases in distance or intensity during training sessions, or excessive hill climbing.^{3,4}

The tendon is surrounded and enclosed by a sheath called the *paratenon*, which provides the major blood supply to the Achilles' tendon. However, there is an area of reduced vascularity approximately 2-6 cm superior to the attachment of the Achilles' tendon at the calcaneus.⁵ This area of relatively decreased blood flow is at risk for injury development.⁶



Figure 1: Posterior View of Normal Achilles' Tendon from gastrocnemius muscle to the calcaneus.

FUNCTION

The ankle moves in four directions: dorsiflexion, plantarflexion, inversion, and eversion. The muscles in the calf and foreleg control motion of the ankle. The muscles of the calf include the *posterior tibialis* muscle, the *flexor hallucis longus*, the *flexor digitorum longus*, and the *gastrocnemius-soleus complex*. Inversion occurs when the ankle moves medially (Figure 2), and is controlled by the posterior tibialis muscle. Plantarflexion (Figure 3) occurs when the toes point away from the head. This action is controlled by several muscles grouped into the primary plantarflexors and the secondary or accessory plantarflexors. The gastrocnemius-soleus complex is the primary plantarflexor. This muscle group is extremely strong, allowing plantarflexion while weight bearing.

When the gastrocnemius muscle contracts, the tendon heel (calcaneus) moves and shortens. As the muscle-tendon complex contracts, the tendon moves to point the foot downwards (plantarflexion).

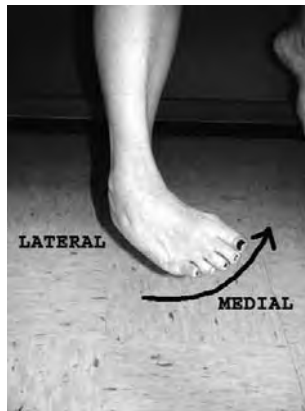


Figure 2: Inversion



Figure 3: Plantarflexion

This is the action that allows a person to stand on one's toes, to run, to jump, to walk normally, and to go up and down stairs. When the Achilles' is ruptured, the push off ability of the leg is seriously impaired. In the normal state, continuity of the Achilles' tendon is required for a weight bearing push off motion (plantarflexion).

The secondary plantarflexors include the *posterior tibialis* muscle, the *flexor hallucis longus*, and the *flexor digitorum longus* muscles. Although these muscles allow the ankle to be plantarflexed, plantarflexion of the ankle is not the primary function of these muscles. For that reason, when these muscles contract and the ankle plantarflexes, there is very little strength generated. Clinically, the implication is

that when a patient has an Achilles' rupture, and is non-weight bearing, the secondary plantarflexors will allow the patient to plantarflex the ankle. Thus, with a casual examination, if active plantarflexion is tested, the examiner may miss the diagnosis of an Achilles' tendon tear due to the action of the secondary plantarflexors. However, with an Achilles' tendon tear, plantarflexion in the weight bearing position is usually non-existent or extremely limited when compared to the uninjured side.

Eversion (Figure 4) is accomplished by the *peroneal longus* and *peroneal brevis* muscles in the lateral compartment of the lower leg. As these muscles contract, the foot moves outward or laterally (eversion) at the ankle.

Active dorsiflexion (Figure 5) of the ankle is accomplished by the action of the *tibialis anterior* muscle, with the secondary dorsiflexors (*extensor hallucis longus* and *extensor digitorum longus* muscles). When these muscles contract, the ankle and foot move upwards towards the head (dorsiflexion). However, for dorsiflexion to occur, the Achilles' tendon and gastrocnemius must be relatively flexible and lengthen as the ankle dorsiflexes. When the lengthwise flexibility of the gastrocnemius and Achilles' complex is decreased, ankle dorsiflexion is also decreased.

Running and walking up hills requires maximum ankle dorsiflexion, requiring maximum lengthwise flexibility of the Achilles' tendon and gastrocne-



Figure 4: Eversion



Figure 5: Dorsiflexion

mius complex. If for some reason the flexibility of the Achilles' tendon is compromised, it is unable to stretch maximum dorsiflexion. In this situation, it is possible for the tendon to be injured due to stretching or to possibly rupture.

TYPES OF INJURIES

Basically, Achilles' tendon injuries may be divided into two broad classes. The first is tendonitis, and the second is a rupture (tear) of the tendon. Achilles' tendonitis is an inflammation of the tendon (with continuity of the tendon intact). It often results from a small tendon stretch injury that causes micro tears. These micro tears lead to an inflammatory response with pain and swelling. Unfortunately, as the tendon swells, it loses lengthwise flexibility. As a result of decreased flexibility, the ankle dorsiflexion becomes limited. However, when the patient continues to be active, the ankle overstretches the restricted swollen tendon. The position of maximum dorsiflexion results in further injury, including additional micro tearing and further swelling. In effect, a cycle develops in which the swelling leads to decreased flexibility and structural strength, which then leads to further injury when normal activities are continued, which leads to further swelling and an even greater loss of flexibility. When untreated, this cycle results in failure to heal and may progress to a chronically painful condition, or even a complete rupture of the tendon. Of course, the tendon may also tear from a sudden force that results in an acute rupture of a previously normal tendon.

In either mechanism, when the tendon tears the patient often hears or feels a pop at the back of the ankle. For example, if the patient is playing basketball, he often thinks another player kicked the back of the ankle.

When the tendon ruptures, pain, swelling, and loss of function occur. Since the calf muscle is no longer attached to the heel bone, people find it difficult to walk normally, and have difficulty doing activities that require any type of significant push off with their toes (such as running, jumping, doing toe raises, and walking up hills or stairs). Left untreated, the tendon often fails to heal, resulting in permanent disability.

DIAGNOSIS

If the tendon has not ruptured, the patient may have a pulling injury to the tendon, or strain. This type of injury results in a stretch injury to the tendon, called tendonitis. Although this often heals without surgery, until completely healed, the tendon is structurally weaker than normal and with continued athletic activity or additional injury producing situations is at increased risk for tearing.

Typically the history for tendonitis starts

with a dull, aching sensation that may occur during or after activity. It may progress, causing more constant symptoms. Often patients complain of pain and stiffness after getting out of bed in the morning, going from a sitting to standing position, or doing activities that require maximum dorsiflexion (such as running, walking up hills, squatting, etc.).

In contrast, the history for an Achilles' tear is sudden loss of function and inability to stand on the toes. With a torn Achilles' tendon, nonweight-bearing plantarflexion may still be present due to the fact that the toe plantarflexors (flexor hallucis longus and flexor digitorum longus) and the posterior tibialis remain intact. However, weight-bearing plantarflexion is virtually absent due to the loss of function of the Achilles' tendon.

Evaluation of the Achilles' tendon is relatively straightforward. The basic principles of exam are used including observation, palpation, and diagnostic testing. When examining the Achilles' tendon, look for areas of swelling. Is the swelling generalized, or is there a focal nodular area on the tendon? Is there ecchymosis? Is there any crepitus (palpable grinding or crackling beneath the skin) at the Achilles' tendon as the ankle goes from dorsiflexion to plantarflexion? Is there a gap? What is the functional level of the gastrocnemius and Achilles' tendon complex?

With tendonitis, the most common signs are either focal tendon swelling or generalized tendon swelling. Ecchymosis is rarely seen in tendonitis. There is usually a focal area of tenderness in the Achilles' tendon approximately 2-6 centimeters above the calcaneus. Since the focal swelling leads to decreased flexibility, maximum dorsiflexion of the ankle with the knee in full extension will usually reproduce the discomfort. In addition, repeated ankle dorsiflexion and plantarflexion may allow crepitus to be palpated at the Achilles' region.⁷ This is due to the swollen tendon rubbing on the inside of the overlying sheath (*paratenon*).⁸ Crepitus that occurs with motion is most likely due to generalized swelling of the tendon.

When evaluating the patient for an Achilles' injury, observation is critical. For a tendon rupture, the area of the rupture is often swollen, tender, bruised (ecchymotic), and may actually have a palpable gap in the tendon. When looking at the posterior aspect of the heel in profile, if there is a localized site of depression, then the diagnosis of an Achilles' tendon rupture must be considered. (Figure 6) The site of the depression represents the separation between

the margins of the Achilles' tendon when it ruptured. If there is any question as to the presence of a depression, comparison with the opposite Achilles' tendon should be performed. Light palpation of the area will usually localize tenderness, and identify a palpable gap in the tendon. Obviously bruising (ecchymosis) may also be present due to the traumatic nature of the injury.

The most reliable diagnostic study for a suspected rupture of the Achilles' tendon is the Thompson test,⁹ performed during the physical exam. When the test is abnormal, the probability of a



Figure 6: Side View of Ruptured Achilles' Tendon. Notice depression at site of rupture (red circle). (Courtesy of the Center for Orthopaedics and Sports Medicine)

ruptured tendon is extremely high. The patient lies face down with the foot extended beyond the table. The examiner grasps the calf muscle and squeezes the calf between the thumb and fingers. If the Achilles' tendon is in continuity ("normal"), squeezing of the calf will spontaneously plantarflex the ankle. (Figure 7)

However, if the calf squeeze maneuver fails to produce ankle plantarflexion (Figure 8), the tendon is ruptured.⁹ If there is any question of a normal test, the opposite (uninjured) leg can be tested for baseline results. In general this test should be done on every Achilles' injury so that an Achilles' rupture is not missed.



Figure 7: Negative Thompson Test (Normal Test)

X-rays, although they do not show the tendon reliably, do show the calcaneus. When doing the x-ray, the provider is checking to see if the calcaneus has been injured. In some cases, the tendon will not tear; but literally pull (avulse) a piece of calcaneal bone off of the rest of the calcaneus. Although this is repairable, the technique is different than merely



Figure 8: Positive Thompson Test (Abnormal Test)

sewing the two ends of a ruptured tendon together. If the exposure is correct on the x-ray, occasionally a disruption in the soft tissue shadow of the Achilles' tendon will be noted. However, the diagnosis of an Achilles' rupture may be reliably made without x-rays, based on the results of the Thompson test.

TREATMENT

With tendonitis, the usual regimen consists of anti-inflammatories, ice, and activity modification.¹⁰ Heat should *never* be used. The heat increases blood flow to the area, increasing swelling and inflammation. Although the heat may feel good, the overall effects of heat worsen the condition and delay healing.

Activity modification may take several different approaches. Obviously, decreasing activities until the acute symptoms subside is one option. Other options involve treatments to decrease the stress level on the tendon, decrease dorsiflexion, or both. Limit ankle motion, and hence the stress on the Achilles' tendon. Placing a 1/2 - 3/4 inch heel lift into the shoe will decrease tension on the tendon, and the amount of dorsiflexion the ankle must go through while walking.⁸ If a lift is used only on the symptomatic side, the resulting unequal leg lengths may cause back pain. Therefore, lifts should always be used on both feet. If lifts are not available, taping of the Achilles' tendon may provide limited support and immobilization.

TAPING TECHNIQUE

Step 1: Apply the first anchor strip inferior to the muscle belly of the gastrocnemius. The second strip goes around the metatarsal heads on the foot.



Figure 9: Step 1

Step 2: With the foot in a position of slight plantar flexion, measure the distance between the strips of anchoring tape as outlined in blue in figure 10.



Figure 10: Step 2

Step 3: On a table, cross 3 strips to form an "X". Two X shaped tape constructs should be used.



Figure 11: Step 3

Step 4: Take each completed series of tape strips and place it from anchor to anchor along the posterior of the ankle and plantar aspect of the foot as shown. The center portion of the X should be placed at the back of the heel. Layer the two X shaped tape strips on top of each other.



Figure 12: Step 4

Step 5: Reapply both of the tape anchors (as was done in Step 1) on top of the strips applied in Step 4, to keep the support strips in place. When complete, tape application should look like Figure 13.



Figure 13: Step 5

Taping in this fashion will help to restrict dorsiflexion and absorb some of the stress on the Achilles' tendon. Figures 14 and 15 represent the right and left ankles of the same asymptomatic person. By comparing the two figures, it is possible to see the decreased dorsiflexion (immobilization of the Achilles' tendon) once tape has been applied. The

tape will eventually loosen. When this happens, the symptoms may worsen. Re-evaluate the patient, check for skin blisters, and reapply tape if necessary.



Figure 14



Figure 15

Occasionally, in severe cases, a temporary removable short leg splint to immobilize the ankle may be required. By applying this splint the Achilles' tendon is also immobilized, and inflammation is decreased.

Physical therapy is usually initiated relatively early in the treatment of tendonitis. Therapy allows gentle stretching of the tendon. (Figures 16 and 17)

ACHILLES' STRETCH: Stand facing the wall. Lean into the wall. Step forward with the uninjured foot and bend the knee. With the weight on the injured back leg, with the back knee straight, with the foot flat on the floor, and with the medial (inner) border of the foot perpendicular to the wall, lean into the wall, stretching for 10 seconds. Repeat 20 times per session. Following the exercise, apply ice for 5 - 10 minutes. Perform 2-3 exercise sessions per day.

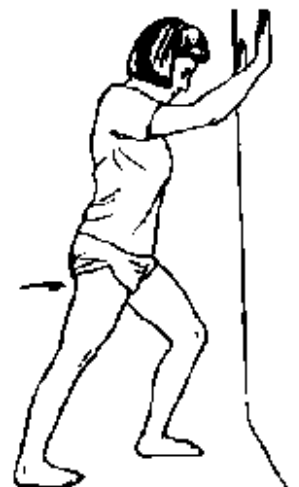


Figure 16:
Achilles' Stretch
(Courtesy of the Center for
Orthopaedics and Sports
Medicine)

The position for the Achilles' stretch is very important. As shown in figure 17, the knee must be straight and the heel flat on the ground with the injured leg as the back leg.



Figure 17: Achilles' Stretch

The position of the foot, relative to the wall is equally important. In figures 18-20, a blue tape has been placed on the floor such that it is perpendicular to the wall. The medial border should be pointed straight at the wall (perpendicular to the wall) as shown in figure 18.



**Figure 18:
Achilles' Stretch with Foot Perpendicular to Wall**

If the foot is externally rotated (Figure 19) or internally rotated (Figure 20) the effectiveness of this stretch is significantly decreased.



**Figure 19:
Achilles' Stretch with Foot Externally Rotated**



**Figure 20:
Achilles' Stretch with Foot Internally Rotated**

The hanging heel stretch should never be done (Figure 21). When a person hangs from the curb (step) to stretch the tendon, body weight is doing the stretch. At the same time, the gastrocnemius muscle has to contract so that the person does not fall off of the curb. Therefore, both a stretching

force and a contracting force are being applied to the tendon at the same time. This essentially prevents healing because it duplicates the injury process.

One of the most important things to recognize in treating Achilles' tendonitis is that the symptoms will disappear before healing has occurred in the tendon. Treatment should be continued for several weeks after a patient becomes asymptomatic.

Once an Achilles' rupture is diagnosed the treatment may be surgical or non-surgical. When treated non-surgically, a short leg equinus (plan-



Figure 21: Hanging Heel Stretch

tarflexed) cast should be applied for a minimum of 6 weeks. If the treatment is surgical, the ankle is usually immobilized in either a weight-bearing short leg cast or a short leg equinus cast until surgery can be performed. If casting is not an immediate option, a short leg splint immobilizes the ankle and tendon, preventing further damage.

The treatment options for a complete rupture of the tendon include surgery followed by casting, or casting alone. There are advantages and disadvantages to each technique and the options should be discussed with the surgeon. In surgery, the tendon is either reattached to the calcaneal bone (if it has been pulled off or avulsed) or the two ends are sewn together (if the tendon has been torn). In most cases, a cast is applied after surgery until healing is complete. Each patient must be considered individually. There are many reasons why a person may not be a suitable candidate for a surgical repair. These include, but are not limited to: poor circulation, presence of skin problems at the site of the injury, age, a sedentary lifestyle, and other medical conditions that make the person a poor candidate for surgery, such as heart

or lung problems. If the injury is treated non-operatively, a cast is applied until healing is complete. The length of time required for healing is highly variable, and may take six months for complete healing and maturation.



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He has served as president of the largest regional orthopaedic association, the Southern Orthopaedic Association. Currently, he is the Director of the Center for Orthopaedics and Sports Medicine and serves as the orthopaedic sports medicine specialist on the USSOCOM Curriculum and Evaluation Board.

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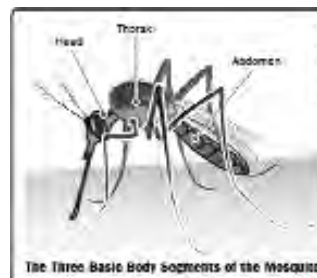
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Viral Mosquito-Borne Febrile Arthritides

Shawn F. Taylor, MD

ABSTRACT:

Special operations medical personnel routinely treat patients in areas with endemic diseases considered obscure by stateside practitioners. We receive training to recognize major viral hemorrhagic fevers, bacterial infections, and protozoa and helminth infections common to tropical medicine in under-developed nations. However, febrile viral arthritides may be even more obscure, often going unrecognized or mistaken for more familiar diseases. This article reviews the mosquito-borne alpha-viral arthritides.



FINANCIAL DISCLOSURE: CPT Shawn F. Taylor has indicated that, within the past two years, he has had no significant financial relationship with a commercial entity whose products/services are related to the subject matter of the topic he will be addressing or a commercial supporter of this educational activity.

OBJECTIVES

1. Describe measures to prevent the spread of these febrile diseases.
2. Discuss other febrile illnesses spread by mosquitoes.
3. Identify other illnesses with similar symptoms and presentation.

CME: This activity has been planned and implemented in accordance with the essential areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through joint sponsorship of USUHS and the Journal of Special Operations Medicine. USUHS is accredited by the ACCME to provide continuing medical education for physicians. USUHS designates **completion of Viral Mosquito-Borne Febrile Arthritides and Assessment & Management of Concussions in the Special Operations Unit (combined) has been approved for 1 CME and 1.2 CNE.** Test questions are on page 52. Please complete the answer sheet on page 54 and mail or fax it to us.

INTRODUCTION

Mosquito-borne viral, febrile arthropathies typically present as acute, self-limited disease manifested by fever, chills, headache, myalgias, and arthralgias.¹ Six mosquito-borne viruses have been described as causing a dengue-like illness.² Most of us have more familiarity with the major viral hemorrhagic fevers such as yellow fever, dengue fever, Lassa fever, Crimean-Congo hemorrhagic fever, Argentine hemorrhagic fever, and Bolivian hemorrhagic fever. Other major viral hemorrhagic fevers that have also received much attention include the Ebola and Marburg viruses. Hemorrhagic fever with renal syndrome was first recognized by Western medicine during the Korean War, and the less severe *nephropathia epidemica* has been recognized since the 1930s.³ We are also well-versed in other viral infections such as Japanese B encephalitis, hepatitis A, hepatitis B, hepatitis C, and delta hepatitis. Other

diseases we receive training on include bacterial infections such as typhoid fever, meningococcal disease, pertussis, diphtheria, and tetanus. In contrast to most US trained medical providers, we know how to prevent, prophylax, and treat malaria “in our sleep.”

Other major protozoa infections, such as African trypanosomiasis, South American trypanosomiasis (Chagas’ disease), and Leishmaniasis are nearly household names to us. The number of times we



This female *Anopheles gambiae* mosquito is feeding. You can see the blood swelling her abdomen.
Photo courtesy CDC & Prevention, photographer Jim Gathany

have tried to spell and correctly pronounce the major helminthic infections such as schistosomiasis, filariasis, and ascariasis is well above average. However, despite deploying to endemic areas where up to 10 to 15% of acute, epidemic febrile illness may be attributed to mosquito-borne alpha-viruses, most of us have little familiarity with the names Mayaro, Chikungunya, O'nyong-nyong, Ross River, Sindbis, and Barmah Forest Fever.^{4,5,6}

MAYARO FEVER

Mayaro fever is a mosquito-borne viral illness that is endemic to rural areas of South America near tropical rain forests.^{7,8} The virus belongs to the family *Togaviridae* and the genus *Alphavirus*. Typical clinical manifestations include the abrupt onset of fever, chills, headache, myalgias, arthralgias, and may also include epigastric pain, backache, nausea, vomiting, photophobia, vertigo, dizziness, eye pain, rash, and diarrhea during a two to four day course. The arthralgias are typically the most severe and prominent manifestation, are often temporarily incapacitating, and may persist for up to two months. Cases of outbreaks and epidemics of Mayaro fever confirmed by virus isolation or serology testing have been documented in Trinidad, Suriname, Brazil, Bolivia, French Guiana, and Peru.^{4,6,7,9,10,11} The virus was first isolated in 1954, and the first epidemics described in 1955 in Brazil and Bolivia. There are no specific measures to prevent the disease. Prevention includes avoiding mosquito bites in endemic areas by using protective clothing, barriers, and repellents. Treatment is symptomatic and no vaccine is available.²

CHIKUNGUNYA FEVER

Chikungunya Fever is a self-limited dengue-like illness caused by an alpha-virus transmitted by mosquitoes of the genus *Aedes*, principally occurring in Asia, the Middle East, and Africa, and has been spreading across Indonesia during the rainy season, particularly in regions with high rainfall levels.¹² Western medicine first described the disease in Tanganyika in 1952, but native Kimakonde speakers describe the disease via oral history previous to this (Chikungunya is the Kimakonde verb meaning "to become contorted"). It is characterized by a rash, fever, and severe joint pain (arthralgias) that usually last for three to seven days, and may sometimes have a hemorrhagic component.¹³ Because of its effect on the joints, Chikungunya has been classified among the arthritic viruses. The virus is closely related to the African O'nyong-nyong virus from the same

group, which has similar disease producing potentials.¹⁴ In some cases, the arthralgias have persisted and recurred for years after the initial infection and presentation resolved.^{10,11} Treatment is symptomatic, and prevention is key. An experimental live-attenuated vaccine is not yet available or shown to be effective for humans.¹⁵

O'NYONG NYONG

Taking its name from an African phrase meaning "very painful and weak," O'nyong nyong virus caused a major epidemic in the late 1950s in Uganda, Kenya, Tanzania and Malawi which affected an estimated 2 million people.¹⁶ In recent years, outbreaks have been rare and usually follow the rainy season in East and West Africa and Zimbabwe. *Anopheles*, the same mosquito responsible for the spread of malaria, transmits the disease.¹⁶ There is no preventive vaccination and the best means of protection is to observe the usual precautions for avoiding insect bites. The illness is indistinguishable from Chikungunya fever and dengue fever with the main symptoms consisting of high fever, severe joint pains, headaches, swollen lymph glands and occasionally a generalized rash.¹⁷ Recovery from the acute symptoms usually takes about two weeks, but joint pains can persist for longer. The infection can cause miscarriage in pregnant women. There is no specific treatment for O'nyong nyong virus, only general care such as symptom relief and rest. No serious long-term effects have been reported following infection.

ROSS RIVER FEVER

Taking its name from the river in northern Queensland where it was first identified, Ross River virus is endemic throughout Australia, with isolated outbreaks occurring in the islands of the South Pacific.¹⁸ The first recorded outbreak of this epidemic arthritides occurred in 1926, and outbreaks tend to occur after flooding during the rainy season, when mosquitoes are most active.¹⁹ There is no vaccination against the disease and the best protection against infection is to avoid mosquito bites whenever possible. Ross River virus causes a remarkably similar illness to dengue fever. After an incubation period of between 2 and 21 days, symptoms emerge as a flu-like illness with fever, chills, muscle pains, headache, lethargy, and occasionally a rash.^{19,20} Painful, stiff, and sometimes swollen joints, which are usually worse in the morning, may occur. The symptoms tend to be less severe in children. Although the acute illness resolves fairly quickly, the joint pains and

malaise can continue for several months.²¹ A case of even longer, persistent joint symptoms has been recorded.²² Blood tests show antibodies to the virus. While Ross River and other alpha-virus cases have been reported in people who travel to endemic areas, Ross River has specifically been described as having military implications.²²⁻²⁷ No specific treatment is available, but rest and pain relief such as ibuprofen relieve the symptoms.

BARMAH FOREST VIRUS

Barmah Forest virus and the Ross River virus cause a very similar disease and share similar vectors and environmental requirements.^{28,29} In fact, one may be misdiagnosed as the other due to very specialized lab testing needed to differentiate the two.³⁰ The Barmah Forest virus was first isolated in mosquitoes in the north of the Australian state of Victoria in 1974, although it was not linked to human illness until 1986.²⁰ Occurring in sporadic outbreaks throughout Australia, it is typically less common than Ross River virus.^{31,32} Management focuses on prevention and symptomatic treatment.

SINDBIS

Sindbis virus, the prototype of the alphaviruses, is a precise and complex three-dimensional structure. The virion is made up of 240 copies of each of three structural proteins in a 1:1:1 stoichiometric arrangement, a membrane bi-layer, and a single copy of plus polarity single stranded RNA. The three virus proteins are organized as a double-shelled icosahedron.^{33,34} This virus is found in the same ecological niche as West Nile Virus in Africa.³⁵ Migratory birds carry the virus great distances, and the *Culex* mosquito can transmit both West Nile Virus and Sindbis.^{36,37} The Sindbis virus was discovered by Western medicine in Egypt in 1954, and first shown to be a human pathogen in Uganda.¹ Antigenic variants of the virus have been described in Australia, Europe (Ockelbo), and West Africa (Babanki).³⁸ The clinical manifestations include fever, rash, arthralgias, and occasionally, conjunctivitis and pharyngitis. Similar to the other alphaviruses, management consists of prevention and symptomatic treatment. No vaccine is available.

SUMMARY

These entities cannot be distinguished clinically from each other. Specific diagnoses require specialized laboratory studies. However, typical fluids, antipyretics, and analgesics carried on deploy-

ment are adequate for symptomatic treatment. Geographic location may provide clues to the particular virus involved. Keep in mind, one or two afflicted team members can rapidly exhaust your supplies of intravenous fluids and analgesics, particularly if narcotics are required. Normal saline is the preferred solution for rehydration, with ½ normal saline with 5% dextrose for maintenance fluids if the patient remains too nauseated for oral hydration. Acetaminophen, ibuprofen, and ketorolac often provide effective analgesia. However, as you may have seen with dengue, arthralgias can be quite severe and may require narcotic analgesics such as codeine, oxycodone, or morphine sulfate. Your analgesics may exacerbate nausea and vomiting symptoms, and you may need to add antiemetics to your treatment regimen. Should you be responsible for indigenous populations, large numbers of patients will require host nation or other support to ensure adequate supplies. Especially during rainy seasons, these entities can present as epidemics. (**Editor's note:** A recurrent seasonal epidemic can be planned for, and a secure diagnosis of viral type is usually more likely). Based on your location, tactical situation, and host nation development, local medical resources may need to be activated. Luckily, there is no direct person-to-person transmission. Recovery is usually rapid and complete, and is followed by immunity. Children tend to have a less severe or asymptomatic disease process, while women and certain individuals with specific phenotypes may have a more severe course. Typical prevention for these and other arthropod-borne illnesses is key. Protective clothing, netting, shelter, and insect repellents will decrease risk.

CONCLUSION

While we special operations medical personnel consider ourselves a cut above stateside personnel at tropical medicine, I must admit these disease entities were obscure to me as well until I encountered a patient with Mayaro Fever. I suspect many patients who received treatment for dengue may actually have had one of the above entities. In addition to these six diseases, there are thirteen group C mosquito-borne viral fevers causing similar illnesses with headache, vertigo, backache, myalgias, arthralgias, nausea, and photophobia. Medical education never ends; we will continue to improve and gain knowledge through self directed learning and patient care experience as long as we practice.



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Assessment and Management of Concussions in Special Operations Units

Christopher G. Jarvis, MD

ABSTRACT

Concussions are frequently diagnosed in special operations units, especially after airborne operations and contact sporting events. Current sports-related concussion grading systems and return-to-play guidelines are directly applicable to today's injured special operations service members. These guidelines can be used by both the experienced and in-experience medical providers in the diagnosis, management and return-to-duty determinations of injured athletes and paratroopers. These return-to-play guidelines were initially developed to protect athletes from the deadly "second impact syndrome." However, the future of return-to-play determinations lies with the implementation of neuropsychological testing, which can be used to demonstrate brain injury and its subsequent healing.

FINANCIAL DISCLOSURE: CPT Christopher G. Jarvis has indicated that, within the past two years, he has had no significant financial relationship with a commercial entity whose products/services are related to the subject matter of the topic he will be addressing or a commercial supporter of this educational activity.

OBJECTIVES: Upon completion of this presentation, the reader will be able to

1. Define concussion and be able to relate its etiology.
2. Describe how a concussion presents itself.
3. Will be able to assess and manage concussions.

CME: This activity has been planned and implemented in accordance with the essential areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through joint sponsorship of USUHS and the Journal of Special Operations Medicine. USUHS is accredited by the ACCME to provide continuing medical education for physicians. USUHS designates **completion of Assessment & Management of Concussions in Special Operations Units and Viral Mosquito-Borne Febrile Arthritides (combined) has been approved for 1 CME and 1.2 CNE.** Test questions are on page 55. Please complete the answer sheet on page 54 and mail or fax it to us. **Editor's Note:** Please note that the test is behind the answer sheet. This was done so that the front and back of the answer sheet can be removed as one page.

Introduction

Concussion, defined as a transient disturbance of neurologic function caused by trauma, is frequently diagnosed in the Special Operations and Airborne communities. We so often refer to our fellow soldiers as elite athletes, and thus should treat them that way when it comes to the treatment of concussions. As such, in the absence of studies specific

to the population at risk, the use of published clinical guidelines from the sports-medicine literature might allow medical personnel in our community the opportunity to make a more informed decision regarding the safe return our soldiers to full duty.

Editor's Note: (Clifford Cloonan, MD) It is important to note that although the populations of athletes

and soldiers is demographically fairly close in terms of health and age it is probably not the case that the mechanisms of injury are the same in these two groups, nor are the environmental circumstances the same. Furthermore it is also important to note that these quite reasonable and probably safe guidelines have not, to my knowledge, been prospectively evaluated in terms of their impact on outcomes. So long as these issues are made clear I think it is probably reasonable to recommend these civilian guidelines be considered for use in military settings as appropriate.

| |
|---------------------|
| Headache |
| Dizziness |
| Confusion |
| Tinnitus |
| Nausea |
| Vomiting |
| Visual changes |
| Memory disturbances |
| Poor concentration |
| Irritability |
| Sleep disturbances |
| Personality changes |
| Fatigue |

Epidemiology

The true incidence of mild traumatic brain injury (TBI) or concussions in the military is unknown. This is due to the incomplete reporting of mild concussions. This underreporting was demonstrated in a recent study involving high school varsity football players, in which only 47.3% of concussed athletes reported their injury to a medical professional.¹ This underreporting in the military is the result of a service member's lack of understanding of its significance, desire to not miss training or mission, or to not appear "weak" to his superiors, peers, and subordinates. However, a retrospective prevalence study of US Army paratroopers indicated that 35% of paratroopers with a history of TBI prior to joining the Army had sustained a TBI since joining the Army, compared to 27% of those without a prior history of TBI.² Further prospective studies are needed to determine the true incidence of concussions in the military and more specifically within the airborne community, with additional investigation into risk factors, such as the number of prior jumps, type of

helmet, drop-zone surface, light conditions, and jumpmaster status.

Etiology/Pathophysiology

Head injuries in sports and parachuting occur secondary to an acceleration-deceleration force. Acceleration-deceleration forces produce injury from compressive, shear, and tensile stress to cerebral tissue.³ The rapid deceleration of the cranium which occurs when it strikes the ground during a poor parachute landing fall (PLF) results in the diffusion of energy throughout the cranium and brain, leading to cerebral injury in the form of a concussion, cerebral edema, or intracranial hemorrhages.

Clinical Presentation

Concussions usually present as an acute alteration in mental status subsequent to a traumatic event. Our patients may present minutes to days after a TBI sustained during injury during sports, physical altercation, motor vehicle accident, airborne operation or any other number of physical contact events or accidents. Typically, patients present with one or more of the symptoms found in Table 1, but can present with any number of other abnormalities of neurological function.⁴ These symptoms may present immediately after the incident or may come on gradually as the cerebral dysfunction worsens.

Typical presentations of concussed individuals are: the dazed jumper walking across the drop zone still in his parachute harness, a boxing-smoker competitor who doesn't know where he is or what he is doing, and a soldier conducting combatives who complains of dizziness and nausea after hitting his head on the ground. Any individual presenting with loss of consciousness or the signs or symptoms of a concussion needs evaluation by a medical professional immediately.

Diagnostic Evaluation

This initial evaluation can be made at the point of injury in many cases when a medical professional is available, or in a medical treatment facility at a later time. In the case of an airborne operation it can occur at the point of injury, the soldier assembly area, the casualty collection point, Battalion Aid Station, or any other location that has a medical professional trained in the evaluation of concussed individuals. This evaluation should focus on the neurological examination which should include cranial-nerve testing, deep-tendon reflexes, gross-and-fine

Table 2⁵

Standardized Assessment of Concussion (SAC)

The SAC is an on-site mental evaluation of the athlete. It objectively documents the presence and severity of neurocognitive impairment associated with concussions to provide immediate information to athlete trainers for clinical decision making. The SAC takes approximately 5 minutes to administer.

Orientation: subject is asked to provide the day of the week, month, and year, and the time of day within a hour. (1 point each)

Delayed Recall: approximately 5 minutes Immediate Memory. (1 point each.)

| | |
|----------------------|--------|
| Month | Word 1 |
| Date | Word 2 |
| Day of week | Word 3 |
| Year | Word 4 |
| Time (within 1 hour) | Word 5 |

Orientation Score: 5

Delayed Recall score: 5

Immediate Memory: a five-word list is read to the subject for immediate recall and the procedure is repeated for three trials. (1 point for each correct, total over 3 trials)

| | | |
|---------|---------|---------|
| Trial 1 | Trial 2 | Trial 3 |
|---------|---------|---------|

Summary of total scores:

| | | |
|--------|------------------|----|
| Word 1 | Orientation | 5 |
| Word 2 | Immediate Memory | 15 |
| Word 3 | Concentration | 5 |
| Word 4 | Delayed Recall | 5 |
| Word 5 | Total score | 30 |

Immediate Memory score: 15

The following may be performed between the Immediate Memory and Delayed Recall portions of this assessment when appropriate:

Concentration: the subject repeats, in the reverse order, a string of digits that increase in length from three to six numbers.

Reverse digits: (Go to next string length if correct on first trial. Stop if incorrect of both trials. 1 point each for each string length.)

| | |
|-------------|-------------|
| 3-8-2 | 5-1-8 |
| 2-7-9-3 | 2-1-6-8 |
| 5-1-8-6-9 | 9-4-1-7-5 |
| 6-9-7-3-5-1 | 4-2-8-9-3-7 |

Neurologic Screening:

Recollection of the injury:
Strength:
Sensation:
Coordination:

Months of the year in reverse order.

(1 point for entire sequence correct.)

Dec-Nov-Oct-Sep-Aug-Jul

Jun-May-Apr-Mar-Feb-Jan

Concentration score: 5

Exertional Maneuvers:

1 40-yard sprint
5 sit-ups
5 push-ups
5 knee bends

A composite total score is computed to derive an index of the subject's overall impairment.

motor function, coordination, long-and-short-term memory, and other cognitive tests.⁴ If the initial examination is normal, a reevaluation should occur after having the patient conduct one to two minutes of exertional activity. A return of symptoms or the development of any objective neurological finding mandates a more thorough or sophisticated assessment than can be conducted outside of a medical treatment facility.

The Standardized Assessment of Concussion (SAC) in Table 2 is an effective tool for evaluating potentially concussed individuals and includes testing in all of the above-mentioned areas under the four components of orientation, immediate memory, concentration and delayed recall. The reproducibility of this test as applied to the evaluation of concussed and non-concussed athletes lends itself to possible use with today's military service members. This test is most applicable if a baseline score for the service member can be established upon arrival at the unit, and then used as further evidence that the service member sustained a concussion shown by a drop of at least three points from their baseline SAC score. In developing the SAC, the average score for high school football-player controls were 25.6 out of a possible 30, while the average for concussed football players was 21.5. The concussed players had

already had their baseline established at the beginning of the season as part of the control group.⁵ Subsequent studies have shown that there is no statistically significant variation between baseline or post-concussive scores between high-school and college-level football players.⁶ Whether there exists any significant difference in pre- and post-injury scores between football players and airborne soldiers is unknown.

Unlike most athletic events, airborne operation—related concussions that involve a loss of consciousness (LOC) are often unobserved and the duration of such LOC is unknown. Additionally, the SAC may be too cumbersome for rapid application in the field. The unique situations encountered during military operations make the clinical decision-making process even harder for the medical provider involved in the care of concussed service members. Multiple sources, including the American Academy of Family Physicians and American Academy of Pediatrics (AAFP & AAP), recommend computed tomography (CT) of the head for the evaluation of any LOC greater than one minute.⁷ Given the unknown duration of this LOC in airborne operations, clinicians must rely on factors other than LOC time. Such findings as persistent confusion, amnesia, focal neurological deficits, or other progressive

| Concussions Severity | | | |
|--|--|---|--|
| Guideline | Grade 1 | Grade2 | Grade3 |
| Cantu ¹⁰ | No LOC Either PTA or post-concussion signs or symptoms that clear in less than 30 minutes | LOC lasting less than 1 minute and PTA or post-concussion signs or symptoms lasting longer than 30 minutes but less than 24 hours | LOC lasting more than 1 minute or PTA lasting longer than 24 hours or post-concussion signs or symptoms lasting longer than 7 days |
| Colorado Medical Society ¹¹ | Confusion without amnesia No LOC | Confusion with amnesia No LOC | LOC |
| American Academy of Neurology ⁸ | Transient confusion No LOC Concussion symptoms resolve in less than 15 minutes | Transient confusion No LOC Concussion symptoms resolve in more than 15 minutes | Any LOC |

LOC= loss of consciousness; **PTA**= post-traumatic amnesia

Table 4 **Concussion Return-to-Play Guidelines**

| Concussion Grade | Number of Concussions Suffered | Cantu (Revised) ¹² | Colorado Medical Society ¹¹ | American Academy of Neurology ⁸ |
|--------------------|--------------------------------|---|---|--|
| Grade 1 (mild) | First | Return to play after 1 symptom-free week | Remove from contest May return to same contest or practice if symptom free for at least 20 minutes | Remove from contest May return to play if symptom free within 15 minutes |
| Grade 1 (mild) | Second | Return to play in 2 weeks after 1 symptom free week | May not return to contest or practice May return after 1 symptom-free week | May not return to contest or practice May return to play after 1 symptom-free week |
| Grade 1 (mild) | Third | End season May return to play next season if no symptoms | End season May return to play in 3 months if without symptoms | |
| Grade 2 (moderate) | First | Return to play after 1 symptom-free week | May not return to contest or practice May return to play after 1 symptom-free week | May not return to contest or practice May return to play after 1 full symptom-free week CT or MRI recommended if symptoms or signs persist |
| Grade 2 (moderate) | Second | May not return for minimum of 1 month May return to play then if symptom-free for 1 week Consider ending season | Consider ending season May return in 1 month if symptom-free | May not return to contest or practice May return to play after at least 2 symptom-free weeks End season if any CT or MRI abnormality |

Table 4 Concussion Return-to-play Guidelines Continued

| | | | | |
|-----------------------|--------|---|--|---|
| Grade 2 (moderate) | Third | End season May return to play next season if without symptoms | End season May return to play next season if without symptoms | |
| Grade 3 (severe) | First | May not return to play for minimum of 1 month May then return to play then after 1 symptom-free week | May not return to contest or practice Transport to hospital for evaluation May return to play in 1 month, after 2 symptom-free weeks | May not return to contest or practice Transport to hospital if unconscious or neurological abnormality CT or MRI recommended if post-traumatic symptoms or signs persist If LOC brief (seconds) may return to play in 1 week if no symptoms or signs If LOC is prolonged (minutes), return after 2 symptom-free weeks |
| Grade 3 (severe) | Second | End season May return to play next season if no symptoms | End season May return to play next season if no symptoms | May not return to contest or practice May return to play after minimum of 1 symptom-free month End season if any CT or MRI abnormality |
| Grade 3 (severe) | Third | | End season Strongly discourage any return to contact or collision sports | |

Table 4

CT= computed tomography; **LOC** = loss of consciousness; **MRI**= magnetic resonance imaging

symptoms, should push the clinician towards use of CT for further diagnostic evaluation. These factors are more suggestive of intra-cranial bleeding or other injury, which may warrant early intervention by a neurosurgeon.

The severity of a concussion traditionally is graded based on the presence or absence, as well as the duration, of confusion, post-traumatic amnesia (PTA) and LOC. Confusion and amnesia are hallmarks of a concussion and occur the majority of the time without LOC.⁸ Amnesia may be anterograde or retrograde in nature and is manifest by the patient's inability to recall current events or memories from the distant past.⁹ The more common grading methods published by the Cantu,¹⁰ the Colorado Medical Society,¹¹ and the American Academy of Neurology⁸ use the terms mild, moderate and severe interchangeably with Grades 1, 2, and 3, respectively. There are numerous other classification systems used by other professional groups, but three compared in Table 3 are the most widely used and cited in the literature.

Management/Treatment

The management of concussions in athletes is based on the grade of the concussion and the number of concussions suffered in a season. Once again, the difficulty in managing concussed athletes is: Which return-to-play guidelines does the military clinician use? Currently, there are sixteen guidelines in the medical literature, but mainstream sports medicine physicians usually quote three: the Revised Cantu Guidelines,¹² the Colorado Medical Society Guidelines,¹¹ and the American Academy of Neurologists Guidelines.⁸ As with the severity comparisons above, the three return-to-play guidelines vary slightly from each other in most areas but vary significantly in others. In general, the Colorado Medical Society Guidelines are more restrictive and many commentators see them as too conservative and impractical.¹³ These guidelines have been in use for the last two decades, and serve as a good starting point for anyone involved in the diagnosis and treatment of concussions.

However, it is important to remember that these three guidelines are just that, guidelines. For those not well versed in the diagnosis and management of concussions, the strict adherence to one of these guidelines as part of a physician-approved management protocol is warranted. After reviewing the literature evidence, the experienced clinician should select the system that can be best applied to the pop-

ulation he or she serves. Each case should be evaluated on an individual basis, taking into consideration the number of prior concussions, symptoms, duration, specific sport being played, and time until next competition or contact event. One must always remember that these guidelines were developed around the athlete that may have multiple competitions in a given week, unlike the paratrooper who may not jump again for many weeks or months. Unfortunately, the medic, physician assistant, or physician caring for airborne personnel will likely see a jumper with post-concussive symptoms that last for many month or years, making the determination for return to airborne status a difficult decision. One common theme seen throughout these guidelines is that any new abnormality found on neuroimaging should result in a "end of season" disposition in all cases.

Editor's Note (Clifford Cloonan, MD): It is important to note that as neuroimaging becomes increasingly more sensitive "abnormalities" are now found that were previously not able to be identified and their significance has not been fully evaluated. The finding of a new abnormality on neuroimaging resulting in an "end of season" determination may not be as reasonable now as in the past when only serious pathology was identified by neuroimaging.

The problem with the application of any of the above standard guidelines is: What constitutes a "season" in the military? A season in the military can be envisioned as: every three months, the frequency required for airborne proficiency jumps; every six months, the typical competitive season for most sports teams; or every nine months, the duration of a division's readiness cycle. The clinician must evaluate each individual on a case-by-case basis to determine whether the service member can be safely returned to airborne status, taking into account the individual's prior concussive history, symptoms, any signs associated with the current event, and recovery time required for resolution.

Purpose of the Guidelines

The major concern in early return-to-play of the concussed athlete is the theoretical risk for second impact syndrome (SIS). This syndrome has been seen in the literature since 1973, obtaining the name "SIS of catastrophic head injury" in 1986.¹⁴ Most return-to-play guidelines were designed to prevent this syndrome since its mortality rate approaches 100% when it occurs.¹⁵ SIS is definitively diagnosed when four criteria are met: 1) medical docu-

mentation of first impact; 2) documentation of ongoing symptoms after the first impact; 3) witnessed second impact; and 4) neuropathological or neuroimaging evidence of cerebral swelling without significant intracranial hematoma or other cause of edema.

However, there is considerable debate as to the legitimacy of this syndrome. Many believe it to simply be a variant of post-traumatic diffuse cerebral swelling.¹⁶ Post-traumatic diffuse cerebral edema is a well-established diagnosis in children and adolescents, usually occurs after a single traumatic blow, and commonly has catastrophic results. The time from insult until clinical presentation can be up to several hours for diffuse cerebral edema versus several minutes in SIS. In SIS, the initial impact injures the brain. The second impact occurs before the brain has recovered from the first insult, which leads to loss of cerebrovascular autoregulation and brain swelling secondary to increased cerebral blood flow.¹⁵ This is the same pathophysiology that leads to diffuse cerebral edema after a single impact, thus making the diagnosis of SIS as a completely separate entity debatable. The evidence for repeated concussion as a risk factor for cerebral edema is deficient at this time.¹⁵ However, the repercussions of placing a concussed athlete at risk for SIS is the basis of current return-to-play guidelines in the interest of patient safety until further evidence is obtained to justify a change in practice. These guidelines should be applied to injured service members.

Future Directions

Neuropsychological testing is the future of concussion management. It has been used to varying degrees to evaluate concussed athletes for years. In the 1980s, several National Collegiate Athletic Association football teams conducted studies using neuropsychological testing and demonstrated that test performance of concussed athletes was less than that of non-concussed athletes. The National Football League, specifically the Pittsburgh Steelers, furthered this research and demonstrated in the early 1990s that a protocol involving testing pre-injury, at 24 hours, and at five days post-injury could be used to track brain healing of concussed professional football players. The National Hockey League (NHL) took another important step in 1997 when it mandated neuropsychological testing of all athletes with a standard battery of tests and recruited neuropsychologists all over the United States and Canada to administer and evaluate the results. The NHL

employs these tests as an important aspect of their return-to-play guidelines.¹⁷ Most professional contact sports now mandate the use of standardized neuropsychological testing for their elite athletes.

Conclusions

The guidelines presented for sports-related concussions are likely applicable to similarly injured military members. Perhaps the United States military will consider gathering data such that an evidenced-based and validated algorithm or protocol can be developed for the evaluation and management of their elite combat troops.

Editors Note: Please see editorial on page 68 regarding this article

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Dispelling the Myth: Strengthening the Abdominals will Support a Weak Back

Richard D. Gamble, BSME, 18D

ABSTRACT:

There are many approaches to back pain that do not consider the structure as a whole. While debunking the common myth that strengthening alone will help support an ailing back, the structural relationships affecting pelvic tilt, forward flexion, and lumbar hyperextension are explored.

OBJECTIVES:

1. Identify how chronic pelvic tilt, forward flexion, and lumbar hyperextension affect back pain.
2. Identify the myofascial units causing or splinting a pelvic tilt, forward flexion, and lumbar hyperextension.
3. Explain the importance of balance and length in preventing back pain.

INTRODUCTION

A common prescription for those who have chronic back pain is to strengthen their abdominal muscles to help “support” the lumbar spine by counterbalancing the erector spinae. The answer to why this method does or does not work lies in recognizing the relationships between the muscles affecting pelvic tilt, forward flexion, and lumbar hyperextension.

BALANCE AND LENGTH

The primary weakness of most programs to “support” the back is the focus on strengthening the low back (using various means) and/or the abdominals (using crunches or sit-ups). A different approach, used by some doctors or therapists, teaches the patient to achieve and maintain “pelvic neutral,” using an exercise regimen focused on correcting a pelvic tilt. These approaches are limited in that they ignore the various compensations the body makes to maintain balance in the gravitational field.

An individual with chronic shortness on one side of the body needs balance to maintain a healthy, flexible spine, but merely strengthening the other side may create more complications, not less. Strengthening is important for overall tone and balanced tonus around the spine; however, increasing

tonus around the spine without creating length on the shortened side causes increased pressure on the supporting central structure, the spine. (Figure 1) To better visualize this, imagine trying to correct a leaning tent by tightening one side to pull it upright,



Figure 1-Psoas-Erectors

rather than also loosening the other side that it is falling toward. Tightening one side without loosening the other compresses the pole (your spine) between. (Figure 2) “If the body is balanced, not only do flexors flex, but the extensors simultaneously extend.”¹ Balance *and* length are needed in a healthy relationship between myofascial units. (For further detail on the balance of myofascial relationships, see [A Hands-On Approach to SOF Medicine: Relief, Rehabilitation, and Prevention of Back Pain](#), JSOM, Fall 2003).

ANALYZING STRUCTURE

To facilitate understanding, the myofascial units affecting the

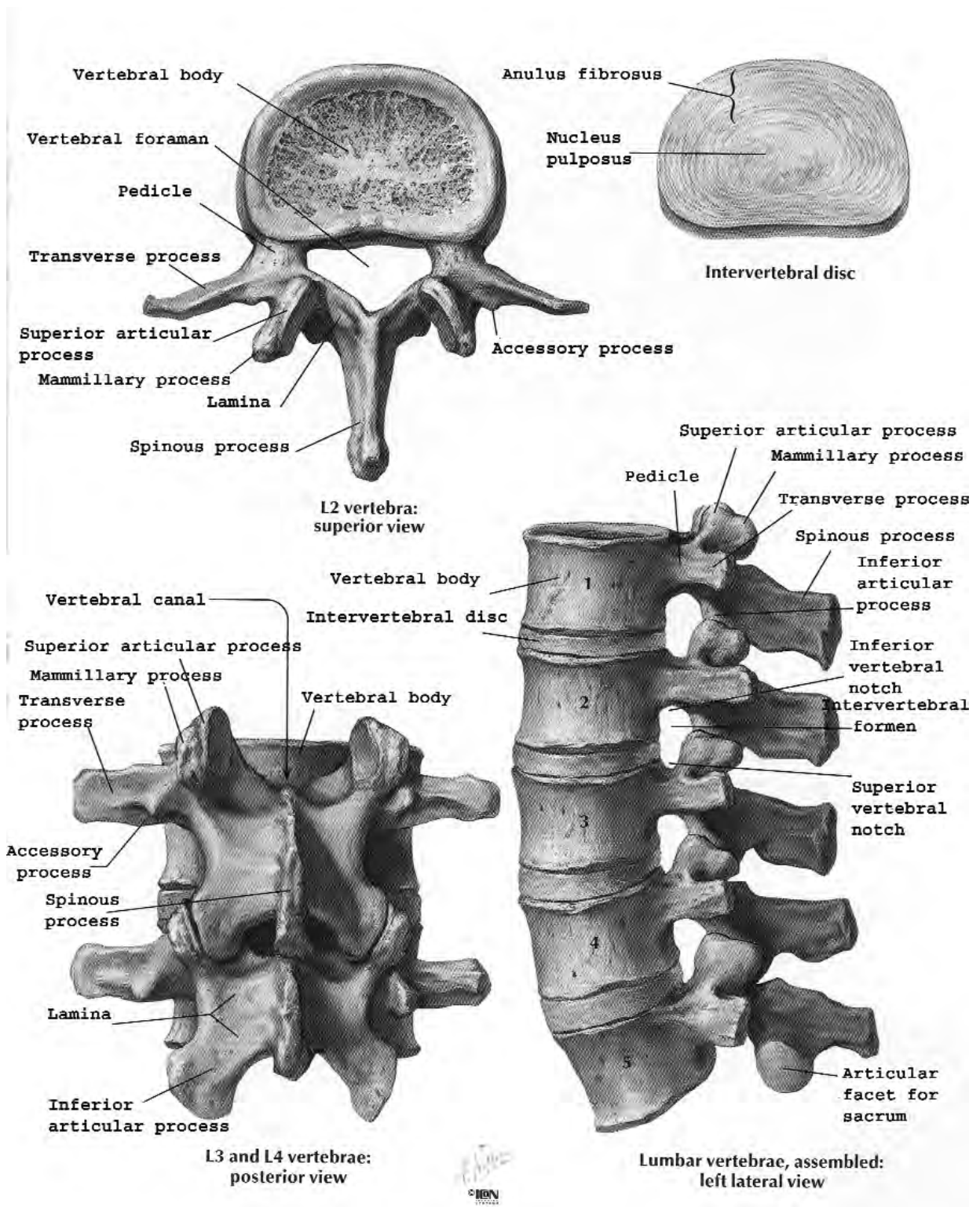


Figure 2 – Lumbar Spine

back will be divided into three areas: those affecting pelvic tilt, forward flexion, and lumbar hyperextension. The part these myofascial units play in creating or maintaining these conditions is explored in detail.

PELVIC TILT

Pelvic tilt is affected by all the myofascial units attaching to the pelvis from above or below. Anterior-posterior tilt and lateral tilt will be considered separately, as will the concept of torsion through

the pelvis; however, this section will focus primarily on the negative effects of an anterior tilt.

Anterior-Posterior tilt

Anterior and posterior tilts are indicative of an imbalance of the myofascial units around the spine in the sagittal plane. Anterior tilt can be directly caused by shortness in the *iliacus*, *rectus femoris*,

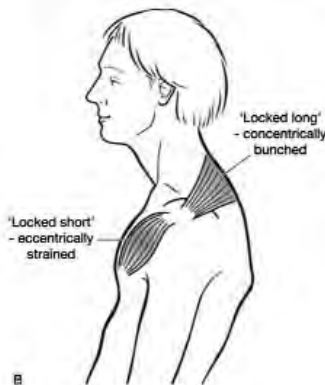
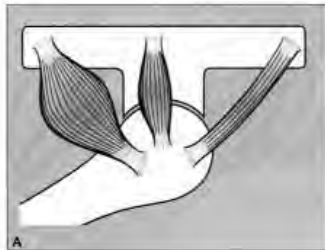


Figure 3 – Locked Short/Locked Long

and the anterior adductors. The erectors and *quadratus lumborum* pull superiorly on the posterior pelvis, “splinting” an anteriorly tilted pelvis in position. An anterior tilt creates lumbar strain through the L5-S1 joint – the lumbar spine is pulled forward by its foundation, the sacrum. This creates or exaggerates a lumbar lordosis and limited flexibility in hip extension, increasing potential for back pain and muscle strain.

Posterior tilt is much less common, and the lumbar spine is usually held in place rigidly, allowing little movement or flexibility. It can be caused by shortness in the *piriformis*, pulling the sacrum anteriorly. Shortening in the hamstrings and the other lateral rotators can “splint” a posteriorly tilted pelvis in position. The slight lumbar lordosis apparent in most people either nearly or completely disappears in these individuals.

The units affecting anterior tilt and posterior tilt balance one another, and frequently are held in a “locked short/locked long” relationship.² (Figure 3) For example: If the *iliacus* is held in a state of fascial shortness (locked short) keeping the pelvis in an anterior tilt, the *piriformis*, lateral rotators, and (to a degree) the hamstrings will be fascially held in a state of eccentric contraction (locked long), so that the pelvis will not tilt farther forward. This strategy that the body uses to splint around a joint freezes it in this dysfunctional relationship and compresses the joint, causing pain and inflexibility.

Note: This article, for ease of analysis, looks at individual muscular/myofascial units. In reality, the body will use all of the resources at its disposal to remove strain from the musculature: shortened fascial planes, adhesions between neighboring muscles and muscle groups (intramuscular septa), and strain patterns in the deep subcutaneous fascia.

Lateral tilt

Lateral tilting of the pelvis is common, and indicates imbalance around the spine in the frontal plane. It can be caused by uneven tonus or shortness in the paired hip flexors, the more lateral myofascial units (*quadratus lumborum* and the obliques), the abductors and adductors, or the lateral rotators. Lateral tilt is noticed by inspecting the level of the lateral iliac crests of a patient standing in anatomical position, and/or by palpating them. A lateral tilt will have a scoliosis associated with it, as the spine at the L5-S1 junction will create a lateral bend above it to bring the center of gravity back over the pelvis.

Myofascial units and pelvic tilt

The *iliacus* is one of the deep hip flexors. It attaches on the lesser trochanter and the iliac fossa, passing over the pubis deep to the inguinal ligament, and causes pelvic tilt when it is locked short. It shares its inferior attachment with the *psoas*, sometimes earning this “combined” muscle the name *iliopsoas*, although their functions differ somewhat.

Rectus femoris is the most superficial of the quadriceps muscles, and the only one that has a superior attachment to the pelvis at the anterior inferior iliac spine (AIIS) rather than the linea aspera of the femur. This attachment allows the rectus to be a hip flexor as well as a knee extensor. Adhesion between the rectus and the other quadriceps, and the *sartorius* and *tensor fascia lata* at its iliac attachment contribute to shortness.

The other myofascial units creating or holding hip flexion are the anterior adductors: *pectineus*, *adductor brevis*, *adductor longus*, and the anterior portion of *adductor magnus*. Although not in a position of sufficient leverage to greatly affect pelvic tilt, when these units are locked short it will “splint” the pelvis in position.

The *quadratus lumborum* attaches to the posterior iliac crest and the twelfth rib. It strongly affects lateral tilt using the lever of the twelfth rib when contracting unilaterally; bilateral contraction of this muscle tends to draw the ribcage closer to the iliac crest. This compresses the lumbar spine, causes a bend (usually hyperextension), and limits breathing by pre-

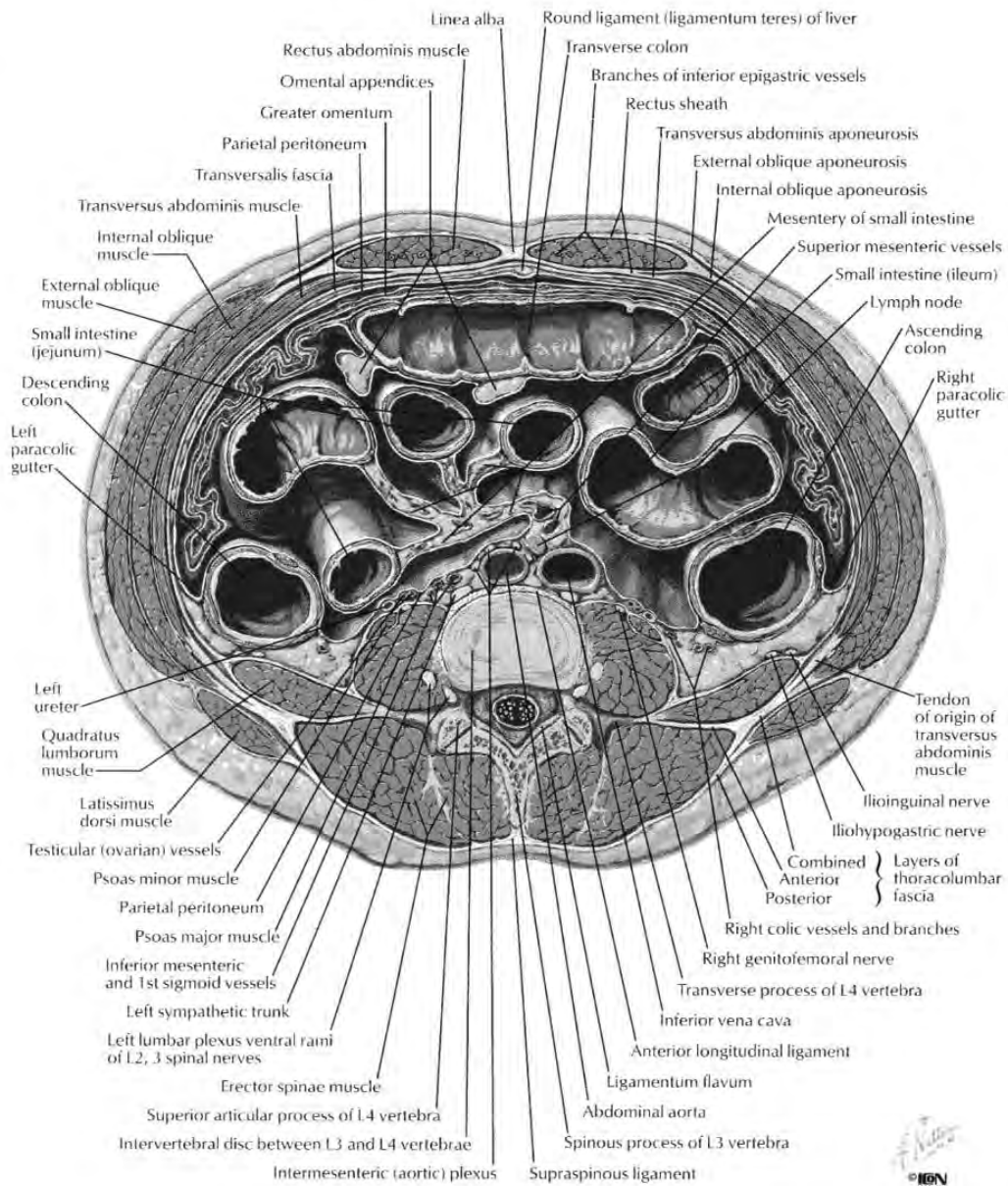


Figure 4 - L2-L3 Cross Section

venting the inferior edge of the ribcage from lifting during inhalation. It will also hold an anteriorly-tilted pelvis from returning to neutral.

Piriformis has the greatest leverage on the pelvis to create posterior tilt or counteract anterior tilt. The *piriformis* attaches to the greater trochanter and the anterior sacrum. In most posterior views it appears to be oriented horizontally, but a lateral view shows that it is oriented anteriorly towards the sacrum almost as much as it is medially. In an anterior tilt, the *piriformis* will be locked long, often locking the sacroiliac joint and creating sciatic pain.

Pelvic Torsion

Pelvic torsion occurs when the pelvis is not tilted anteriorly or posteriorly as a whole, but twisted by an anterior pull on one side and a posterior pull on the other. This torsion will create a fixed relationship (rather than free movement) at the sacroiliac joints and shear at the symphysis pubis. This torsion is not always visually apparent, but can be easily discovered by the comparison (by palpation) of the positions of bony landmarks on the pelvis (ASIS, PSIS).

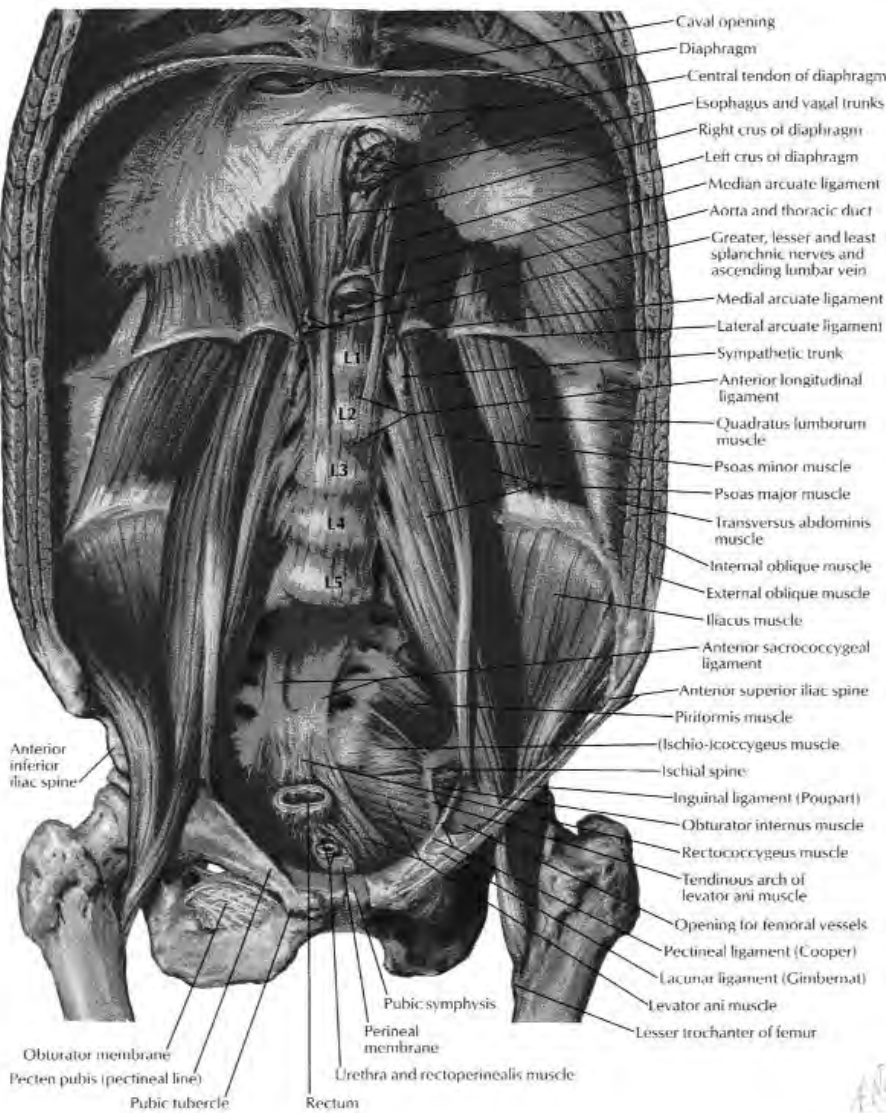


Figure 5 - Abdominal Musculature

FORWARD FLEXION OF THE TRUNK

Forward flexion of the trunk is created by the myofascial units connecting the ribcage to the pelvis. The more anterior a structure lies, the greater its effect on forward flexion.

The *rectus abdominus* attaches on the fifth, sixth, and seventh ribs superiorly, and the pubic ramus and symphysis inferiorly. Contraction of this muscle results in trunk shortness anteriorly (a “crunch” motion). “The rectus is thus like a guy-rope that really has a large effect on all the structures above it, because it has such good leverage on the rib cage... The physics of the situation, in most cases, dictates that a hypertoned rectus will pull the ribs down toward the pubic bone, with a host of secondary results.”³ The reason for this mechanical advantage is the distance of the rectus from the spine, com-

pared to the structures causing extension (erectors). The rectus is at least 2.5 times as far away from the spine as the erectors in healthy individuals, and more in overweight individuals. A shortened rectus will create back strain and limit the upward excursion of the anterior ribcage, limiting breathing.

The external obliques attach on the ribcage and lateral border of the rectus abdominus fascia. The internal obliques are deep to the external obliques, and attach on the lateral border of the rectus abdominus fascia and the iliac crest. The external oblique on one side of the body and

the internal oblique on the other side contract to shorten the distance between the costal margin and iliac crest to which they attach, resulting in a rotation towards the internal oblique and an anterior shortening of the trunk. When both sets of obliques contract equally, the rotations cancel and there is a resulting anterior trunk shortening and an increase in intraabdomi-



Figure 6 – Lateral Psoas

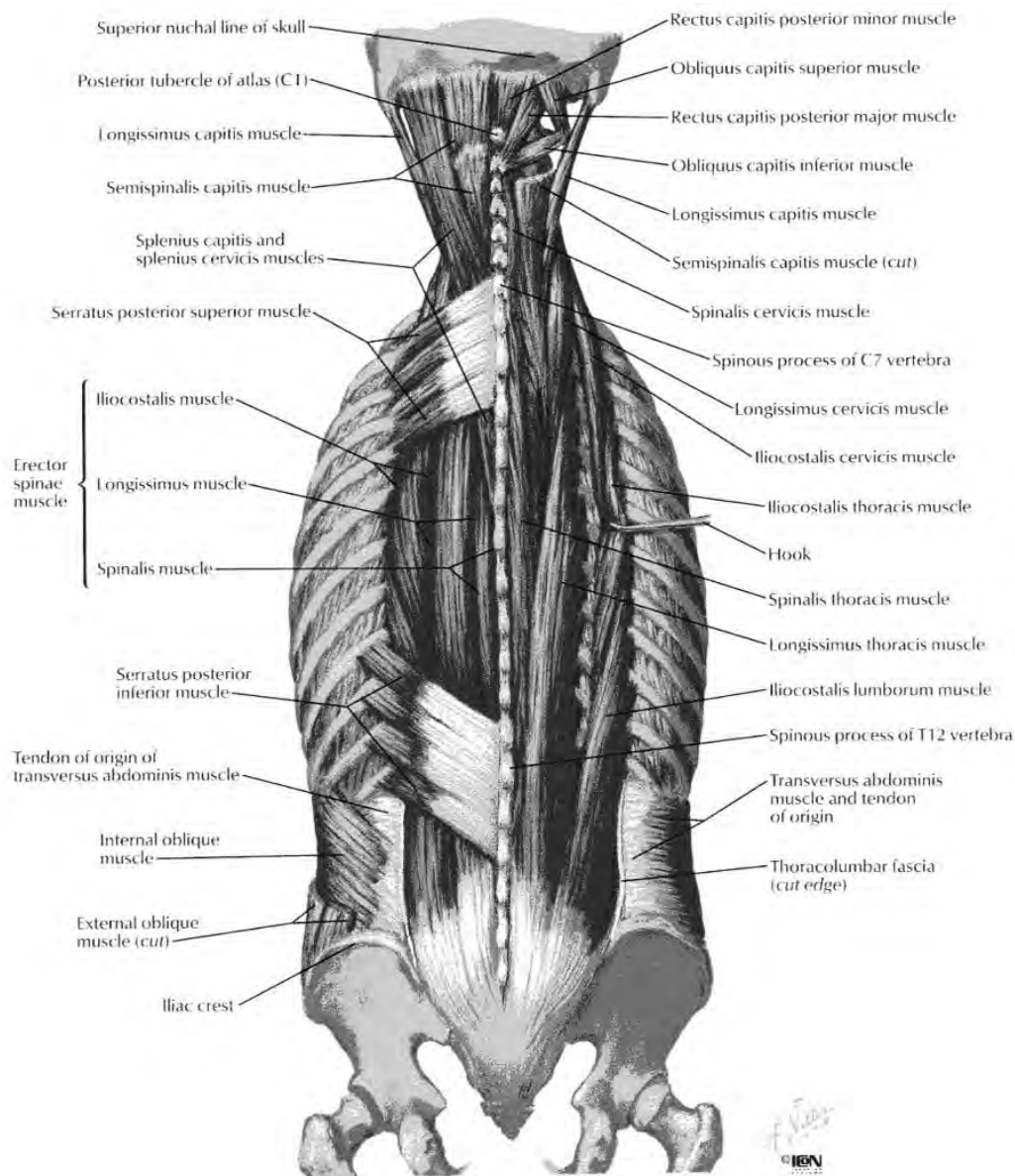


Figure 7 – Erector Spinae

nal pressure. Shortened obliques will create back strain and limit the upward excursion of the lateral ribcage, limiting breathing.

The *transversus abdominis* is a horizontally oriented muscle deep to the external and internal obliques, with attachments on the transverse processes of the lumbar vertebrae and the lateral border of the rectus abdominis fascia. The two transversus abdominii wrap around the body between the ribs and iliac crests like a belt, increasing intraabdominal pressure when they contract. This increase in pressure lifts the ribcage by the dome of the diaphragm, counteracting forward flexion and carrying some of the work of the lumbar spine in supporting the body's weight.

LUMBAR HYPEREXTENSION

Lumbar hyperextension is always a compensation for an anteriorly tilted pelvis or shortened flexors. An anteriorly tilted pelvis carries the spine forward with it – the body's response is to tighten and shorten the lumbar erectors (creating a lumbar lordosis) to bring the thorax (and the body's center of gravity) back where it belongs over the feet. Shortened trunk flexors force the lumbar spine to shorten (by creating a lumbar lordosis) to bring the thorax back where it belongs. A shortened psoas generally pulls the lumbar spine anterior and inferior, carrying L5-S1 forward with it, and causing the body to respond in the same manner it does for an anterior pelvic tilt.

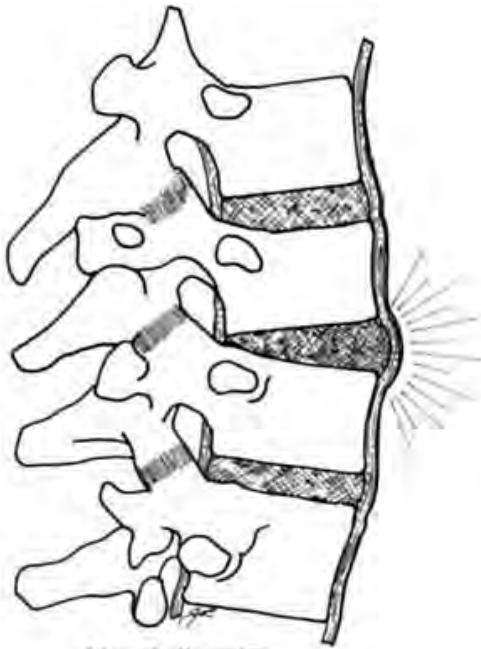


Figure 8 – Herniated Disc

The psoas originates on the T12-L5 vertebral bodies, discs, and transverse processes (TPs) and shares a tendinous attachment with the iliacus on the lesser trochanter. It is a triangular muscle; the inner fibers attach to the lower lumbar spine, while the outer fibers attach to the upper lumbar spine. This broad insertion and its effect is more easily seen in a view of the muscle in hip flexion of 90 degrees, as is the case in quadrupeds and has implications for upper lumbar support as well as lower lumbar lordosis.

The route of the psoas is not a direct one; it passes anterior to the pubis along the way, giving it a much greater mechanical advantage than the erectors. Most anatomy texts do not show the psoas from a lateral view (Figure 6), when this phenomenon is visible, and its effect on tilts and rotations most apparent. “The psoas... creates hyperextension (lordosis) with its lower fibers and lumbar flexion (flattening of the lower back) with its upper fibers. The erectors and transversospinalis create lordosis and finally lumbar compression if they contract too hard.”⁴

LUMBAR SPLINTING

Once shortened, the erectors (Figure 5) become locked short like strapping tape to splint the lumbar spine in position, and keep the erectors from the necessity of continuous effort while standing.

There is little survival value in having a hyperextended lumbar spine – it compresses the intervertebral discs and decreases the space for

nerves and vessels to pass through. It also compresses the discs unevenly, leading to disc herniations (Figure 6) and protrusions where the most damage can be done - at the nerve roots.

WHERE STRENGTH EQUALS SUPPORT

Considering all of the myofascial units that create or exaggerate pelvic tilt, forward flexion, or lumbar hyperextension, there are only three muscles of the trunk that support a vertical lumbar spine, besides the erectors. They are the piriformis, the upper fibers of the psoas, and the transversus abdominii. The piriformis counteracts anterior pelvic tilt by pulling the sacrum towards the femur. The upper (outer) fibers of the psoas counteract hyperextension by flexing the upper lumbar spine. The transversus abdominii counteract trunk flexion by increasing intraabdominal pressure, lifting the ribcage by the dome of the diaphragm. When the other musculature discussed in this article becomes hypertoned or shortened, the result is more stress on the erectors and lumbar spine.

OUR CHALLENGE AS MEDICS

The SOF community and the military in general emphasize fitness as part of physical training and job-related skills. The effects of structure, flexibility, and compensations in the body are often neglected or ignored, setting up our patients for pain, extended rehabilitation, or future injury.

Identifying structural imbalance and the resulting complications (locked short and locked long areas) helps the medic to identify problems and develop a treatment plan. Creating balance and length in the body maintains even tonus, reduces compensations, and increases functional strength. Educating our soldiers in a paradigm of balance and functional strength will help to improve performance and reduce downtime for injuries.

SUMMARY

The common approach of strengthening the musculature of the trunk rather than identifying restrictions to alignment and movement can lead to more injuries in the long run. Functional strength and structural efficiency are concepts that can be applied to fitness training, rehabilitation, and injury prevention. Obtaining and maintaining balance in the body can prevent our operators from becoming liabilities during training and operations.

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Richard D. Gamble is an SOCM Trauma Instructor at the JSOMTC at Ft. Bragg, NC. He received a Bachelor of Science in Mechanical Engineering from Rose-Hulman Institute of Technology. He is a Kinesis Myofascial Integration Practitioner, practicing Thomas Myers' interpretation of Dr. Ida Rolf's 10-Session Structural Integration series. He is also an Intermediate Advanced Practitioner of John Barnes' Myofascial Release and a Licensed Massage Therapist in North Carolina. He entered the Army in 1993 and served 7 years on active duty, first as an Aeroscout Observer assigned to the 2/17 Cavalry and later as a Special Forces Medic at the 3rd SFG(A). After active duty, he joined the 20th SFG(A) as a Senior Medic and was mobilized in December 2001 to D/4/1 SWTG(A). He now works as a civilian contractor at the JSOMTC, and has a private practice in Structural Integration and Myofascial Release.

JOURNAL OF SPECIAL OPERATIONS COMMAND READERSHIP SURVEY

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CONTINUING MEDICAL EDUCATION TEST

Achilles' Tendon Injuries: An Overview

1 CME or 1.2 CNE

JSOM



1. The tibialis anterior muscle is a secondary plantarflexor of the ankle.
True False
2. Active plantarflexion of the ankle is not possible with a complete Achilles' tendon rupture.
True False
3. The Thompson test is diagnostic for Achilles' tendonitis.
True False
4. A positive Thompson test occurs when spontaneous plantarflexion occurs with application of a calf squeeze.
True False
5. Treatment for Achilles' tendonitis includes:
 - a. Wall Stretch
 - b. Hanging Step Stretch
 - c. Heat
 - d. Ice
 - e. All of the above
 - f. A and B and C
 - g. A and B and D
 - h. A and C
 - i. B and D
6. Taping may be used to successfully treat an Achilles' tear.
True False
7. The ankle muscle responsible for eversion at the ankle is:
 - a. Peroneal longus
 - b. Posterior tibialis muscle
 - c. Extensor hallucis muscle
 - d. Gastrocnemius muscle
8. Crepitus at the Achilles' sheath is a diagnostic sign of an Achilles' tendon rupture.
True False
9. With Achilles' tendonitis, part of the treatment involves restriction of active dorsiflexion.
True False
10. X-rays are required to make a definitive diagnosis of a torn Achilles' tendon.
True False

CONTINUING MEDICAL EDUCATION TEST

Viral Mosquito-Borne Febrile Arthritides

1 CME or 1.2 CNE when combined with Assessment and Management of Concussions in the Special Operations Units

JSOM



1. These mosquito-borne febrile illnesses can be treated/avoided by:
 - a. vaccinations
 - b. antibiotics
 - c. prevention and symptomatic treatment
 - d. antiviral medications

2. The mosquito-borne alpha-virus febrile arthritides include:
 - a. Rocky Mountain Spotted Fever
 - b. Lyme Disease
 - c. Dengue
 - d. Mayaro

3. Epidemics of these diseases typically occur during:
 - a. the dry season
 - b. the rainy season
 - c. the coldest season
 - d. the fall season

4. All of the febrile arthritides occur in the same geographic regions.
True False

5. The animals that mosquitoes feed on may carry other harmful viruses that cause other diseases.
True False

Continuing Education Evaluation Form
Journal of Special Operations Medicine, Volume 4, Edition 2 / Spring 04

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POST-TEST – Answer Sheet

Article 1 Page 20 (Rick Hammesfahr, MD)

Please circle the letter that corresponds to the correct answer:

- | | |
|----------------------|----------------|
| 1. True False | 6. True False |
| 2. True False | 7. a b c d |
| 3. True False | 8. True False |
| 4. True False | 9. True False |
| 5. a b c d e f g h i | 10. True False |

Continuing Education Evaluation Form
Journal of Special Operations Medicine, Volume 4, Edition 2 / Spring 04
Date of original release: 25 May 04
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Article 2 Page 28 (Shawn F. Taylor, MD)
Please circle the letter that corresponds to the correct answer:

1. a b c d
2. a b c d
3. a b c d
4. True False
5. True False

Article 3 Page 32 (Christopher G. Jarvis, MD)
Please circle the letter that corresponds to the correct answer:

1. a b c d
2. True False
3. a b c d e f
4. True False
- 5 True False

| Article 1 | | Article 2 | | Article 3 | |
|------------------|------------|------------------|------------|------------------|------------|
| Page No. 20 | | Page No. 28 | | Page No. 32 | |
| 5-Agree | 1-Disagree | 5-Agree | 1-Disagree | 5-Agree | 1-Disagree |

Educational Value:

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I learned something new that is important. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| I verified some important information. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| I plan to discuss this information with colleagues. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |

Readability Feedback:

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I understood what the authors were trying to say. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| Overall, the presentation of the article enhanced my ability to read and understand it. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |

Were the educational objectives of the article(s) met? YES ___ NO ___ YES ___ NO ___ YES ___ NO ___

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I hereby certify that I have read the article(s) of the activity identified above and am eligible to claim credit. Print Name: _____

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CONTINUING MEDICAL EDUCATION TEST

Assessment and Management of Concussions in Special Operations Units

1 CME or 1.2 CNE when combined with Viral Mosquito-Borne Febrile Arthritides

J S O M



1. The true incidence of mild traumatic brain injury (TBI) or concussions in the military is unknown. This is due to:
 - a. the incomplete reporting of mild concussions.
 - b. the result of a service member's lack of understanding of its significance.
 - c. the desire to not miss training or mission, or to not appear "weak" to his superiors, peers, and subordinates.
 - d. All of the above

2. Head injury occurs secondary to an acceleration-deceleration force and produces injury from compressive, shear, and tensile stress to cerebral tissue.
True False

3. Which is NOT a symptom of a concussion?
 - a. Fatigue
 - b. Memory disturbances
 - c. Unequal pupils
 - d. Nausea and vomiting
 - e. Headache
 - f. Confusion

4. If the initial evaluation is normal, a repeat exam should occur after having the patient conduct 1-2 minutes of exertional activity, looking for a return of symptoms or a development of neurologic findings.
True False

5. There are three guidelines in the medical literature for the management of concussions that are based on the severity grade of the concussion and the number of concussions suffered in a season.
True False



PJs AT THE BATTLE OF TAKUR GHAR RIDGE

Everett Evans, PJ

Technical Sergeant Keary Miller is a Pararescueman. He is assigned to an Air National Guard special operations unit at Louisville, KY, and deployed in support of Operation Enduring Freedom, where he would rescue a fallen comrade.

Sergeant Miller was the PJ Team Leader on the recovery team that went in for SEAL Neil Roberts who had fallen from his helicopter after an aborted landing at Takur Ghar in Afghanistan. Several soldiers and airmen are alive today because of Keary's heroic actions on the ridgetop during the early morning hours of March 4, 2002, and the 15 hours that followed. Sergeant Miller is not *the* hero, but he is certainly *a* hero of the rescue operation. They all are.

Sergeant Miller was the fifth or sixth man out of the helicopter when it crash-landed on the ridge after being hit by rocket-propelled grenades and heavy small arms fire. Two soldiers in front of him were killed outright as they stepped out of the helicopter and another two were critically wounded. Sergeant Miller's teammates, PJ Senior Airman Jason Cunningham, and Army medic Sergeant First Class Cory Lamoreaux were still inside and began treating those casualties. By the time Sergeant Miller managed to make it out of the helo, there were three soldiers killed and two critically wounded. Realizing the situation and the fact that they were surrounded by enemy forces, he yelled to his other teammates who were running out to hit the deck immediately to avoid becoming casualties themselves.

Sergeant Miller was now on the ground at the rear of the aircraft amid chaos. Enemy fire seemed to be coming from every direction (and in fact, it was!). The heaviest was coming from the one o'clock, 70 meters from the nose of the helo, and less intense fire from the three and five o'clock positions. Terrain on the left side of the helo was very steep; nowhere to go over there. Sergeant Miller was laying beside the ramp of the helo and three others were pinned down behind the only cover they could find, a small outcropping of rock about 10 inches high, and all were

returning fire. They quickly got rid of the threat to their right, but they still took intense fire from the one o'clock position.

They needed air support. They would need "comms" to get the close air and immediate evacuation they needed. The air controller's radio was lying 30 meters from the rear of the helicopter. Sergeant Miller grabbed the radio to pass the initial status calls and request emergency evacuation. He heard his combat controller teammate already talking to fire support aircraft, which started pounding the area with close air support. Unfortunately, the answer back on evacuation was that the area was still too hot for evacuation at that time.

They were only fifteen minutes into what was to be an ordeal that would last all day and most of the next night. Sergeant Miller returned to the helo to help treat the wounded, with SrA Cunningham and SFC Lamoreaux. He could see that the cockpit area was burning.

Sergeant Miller yelled to his teammates tending to the wounded inside the helo fuselage. They had their hands full. While SFC Lamoreaux put out the fire, SrA Cunningham yelled back that the copilot was hit. He was lying in the snow in front of the helo.

At this point all casualties were still inside the helo and they were still under pretty intense fire.

Sergeant Miller went to get the copilot. He dashed to the front of the helo, still taking small arms fire, and found the copilot bleeding pretty badly with a broken leg. He placed a tourniquet above the bleeder, but the snow was too deep to drag him alone. So he ran back, grabbed the tail gunner and guided him to the front of the helo. Together they dragged the copilot back to the rear of the aircraft through knee-deep snow to continue medical treatment. His actions probably saved the co-pilot's life. At this point, Sergeant Miller had twice exposed himself to enemy fire to recover his copilot.

Back at the rear, Sergeant Miller started gathering remaining ammo from the helicopter and KIA,

redistributing it to the other security positions. There were still good weapons on the aircraft, so he pulled the tail gun off the helo and placed it toward the south, helping an injured crewmember to the spot as security .

Combat was not new to Sergeant Miller. He had the situational awareness to know what was happening – and he knew what he had to do. They were receiving sporadic mortar fire, not very accurate yet, but they couldn't tell from where. He knew the sound and feel of the mortars—they were getting closer and closer to the grounded helicopter. He knew they would have to get the casualties out of the helo before it was hit.

A firefight was still blazing with an enemy bunker at the one o'clock position, but fire was suppressed to the southeast, so Sergeant Miller took this opening to move the casualties from inside the helo to a safer area. They carefully moved the casualties southeast of the helo. By now three were dead and six wounded, with three of the wounded critical.

Four hours later, after some on-target air power and assaults, the enemy bunker was finally destroyed. With the main enemy threat gone, Sergeant Miller and the security team leader made the call to move the casualties one more time to better cover to the north, off the nose of the helicopter. Sergeant Miller moved one of the walking wounded to a security position and supplied him with weapons and ammo before returning to move more wounded. Now the southern casualty collection point was hit with RPGs and a 20-minute barrage of small arms, coming from the ridge to the south. Sergeant Miller then learned his two teammates had been hit by enemy fire. He was now responsible for 14 casualties and the biggest battle now would be against time and the environment.

Sergeant Miller would spend the rest of the engagement tending the wounded. He made several trips back to the helo to gather remaining medical supplies, blankets, and anything that would help. In a last ditch effort to fight the elements, Sergeant Miller had all men who could move, tear the insulation from the helicopter wreckage to keep the wounded as warm as possible while they waited for evacuation.

The last radio call said they wouldn't be evacuated until nightfall and he knew it would get cold—deadly cold. They were in the snow at 10,000 feet. They had used up the supply of whole blood, all IV fluids were gone, they were out of bandages, and the temperature was near freezing. All this combined, took its toll. SrA Jason Cunningham died of injuries an hour and a half before evacuation arrived.

For his gallant efforts and heroic actions, TSgt Keary Miller was awarded the Silver Star.

Chief Master Sergeant Everett "Ernie" Evans is the Chief Enlisted Manager for SOF Pararescue forces, stationed at Hurlburt Field FL. He has been a pararescue specialist for 27 years and is currently the functional manager of PJs assigned to AFSOC Special Tactics Squadrons. He has been a joint planner for Personnel Recovery and CSAR operations since Operation Just Cause. His most recent deployment was to OIF as subject matter expert in support of SOF Personnel Recovery operations. He established the SOCCENT Rescue Coordination Center for the ITO.





SOMA President's Letter

Alan L. Moloff, MD
COL, MC, USA

It was a great honor and surprise to be elected the new SOMA President! I am not sure if it was a reward or a "punishment" for my long service and association with special operations medics around the world. But, it is a great honor.

Last December's conference was very impressive; over 700 people in attendance and a large presence by international military and tactical EMS personnel, as well as VIPs, such as ADM Carmona, Surgeon General, COL (RET) Lee Mize, Rudi Gresham, and you!

In spite of the highest OPTEMPO and deployment schedules in years, the SOF medics participated for fun, comradeship, and to improve their individual and unit skills. And that is what SOF has always been about: hard work, challenges, mission success, excellence, and fun!

I would like to thank COL (RET) Steve Yevich for his service as the past-president of SOMA. I am just now beginning to realize how much of an effort he made and the dedication he had to this great

organization. It is also important to recognize the SOMA Board members. MSG Brochu, MSG Justice, and the newly-elected Vice President representing tactical civilian EMS and Membership Secretary, Mr. David Davis and Dr. Bob Harrington, respectively. Finally, compliments to Mr. (Dr.) Dale Hamilton for his hard work and dedication to our organization throughout the year in making this conference a success. They all deserve a "Thank You" the next time we all get together.

SOMA is for you! There is not a professional paid staff that runs the organization and there is no outside body directing our conference or organization. The SOMA "organization and staff" are volunteers that want to make SOMA and our annual meeting a world-class event. Only YOU have the energy and dedication to make this organization and meeting first rate. We are looking for volunteers to assist us with our speakers and conference organization for December, 2004.

I look forward to hearing from you throughout the year and, if any of you are visiting San Antonio, Texas, where I am stationed, please stop by!

Heat Injury Controls:



Decision to accept risk is made at the appropriate level

- Made in accordance with appropriate MACOM regulation.



Identified controls are in place

- Update WBGT hourly when ambient temperature is $\geq 75^\circ\text{F}$
- Adhere to work/rest cycle in high heat categories. Rest in shade.
- For tasks requiring continuous effort, adhere to guideline and allow several hours of rest afterwards.
- Training event incorporates good prior planning



Monitor and enforce hydration standard

- Encourage frequent drinking, but not to exceed $1\frac{1}{2}$ quarts per hour or 12 quarts per day. Make water more palatable, if possible, by cooling.
- Do not allow soldier or trainee to empty canteens to lighten load (consider imposing a penalty in time events).
- Ensure soldiers are well hydrated before training. Ask about urine; urine is clear if well hydrated.
- Check Riley (water) Card, Ogden Cord or other personal water consumption monitoring systems frequently.



Monitor and enforce eating of meals

- Ensure all meals are eaten during the meal break.
- Ensure adequate time to eat and drink meals.
- Table salt may be added to food when the heat category is high. Salt tablets are not recommended.



Execute random checks

- Spot checks by Cadre, Senior NCO's, and Drill Instructors.
- Enforce battle buddy checks — need to be aware of each other's eating, drinking and frequency of urination.
- Plan placement of leaders to observe and react to heat injuries in dispersed training.



Follow clothing recommendations

- Heat category 1-2: No restrictions.
- Heat category 3: Unblouse trouser/legs, unbuckle web belt.
- Heat category 4-5:
 - Unblouse trouser legs, unbuckle web belt.
 - Remove t-shirt from under BDU top or remove BDU top down to t-shirt (depends whether biting insects are present)
 - Remove helmets unless there are specific safety reasons to keep them on (e.g. range)
- MOPOP 4: Add 10°F to WBGT index for easy work, and 20°F to WBGT index for moderate and hard work.
- Body Armor: Add 5°F to WBGT index.

- The work/rest times and fluid replacement volumes will sustain performance and hydration for at least 4 hours of work in the specified heat category. Fluid needs can vary based on individual differences ($\pm 1/4$ qt/h) and exposure to full sun or full shade ($\pm 1/4$ qt/h)
- NL = no limit to work time per hour.
- Rest means minimal physical activity (sitting or standing), accomplished in shade if possible.

- CAUTION: Hourly fluid intake should not exceed $1\frac{1}{2}$ quarts.
- Daily fluid intake should not exceed 12 quarts.
- If wearing body armor add 5°F to WBGT in humid climates.

If wearing NBC clothing (MOPOP 4) add 10°F to WBGT index for easy work, and 20°F to WBGT index for moderate and hard work.

| Heat Category | WBGT Index, $^\circ\text{F}$ | Easy Work | | Moderate Work | | Hard Work | |
|---------------|------------------------------|-------------|---------------------|---------------|---------------------|-------------|---------------------|
| | | Work/Rest | Water Intake (qt/h) | Work/Rest | Water Intake (qt/h) | Work/Rest | Water Intake (qt/h) |
| 1 | $78^\circ - 81.9^\circ$ | NL | $\frac{1}{2}$ | NL | $\frac{1}{2}$ | $40/20$ min | $\frac{1}{2}$ |
| 2 (GREEN) | $82^\circ - 84.9^\circ$ | NL | $\frac{1}{2}$ | $50/10$ min | $\frac{3}{4}$ | $90/30$ min | $\frac{1}{2}$ |
| 3 (YELLOW) | $85^\circ - 87.9^\circ$ | NL | $\frac{3}{4}$ | $40/20$ min | $\frac{1}{2}$ | $30/30$ min | $\frac{1}{2}$ |
| 4 (RED) | $88^\circ - 89.9^\circ$ | NL | $\frac{3}{4}$ | $30/30$ min | $\frac{3}{4}$ | $20/40$ min | $\frac{1}{2}$ |
| 5 (BLACK) | $> 90^\circ$ | $50/10$ min | $\frac{1}{2}$ | $20/40$ min | $\frac{1}{2}$ | $10/50$ min | $\frac{1}{2}$ |

Fluid Replacement and Work/Rest Guide

HIP Pocket Guide (Heat Injury Prevention Guide)

High Risk for Heat Illness:

- Not acclimatized to heat (need 10-14 days to get trainees adequately acclimated).
- Exposure to cumulative days (2-3 days) of any of the following:
 - Increased heat exposure
 - Increased exertional level
 - Lack of quality sleep

- Poor fitness (Run 2 miles > 16 minutes)
- Overweight
- Minor illness (cold symptoms, sore throat, low grade fever, nausea, vomiting)
- Taking medications (either prescribed or over counter/supplements/dietary aids).

- Example:
- Allergy or cold remedies
 - Ephedra supplement
 - Use of Alcohol in the last 24 hours.
 - Prior history of heat illness (any heat stroke, or >2 episodes of heat exhaustion).
 - Skin disorders such as heat rash and sunburn which prevent effective sweating
 - Age >40 years.

Hazards:

- High heat category - measure WBGT over 75°F
- Exertional level of training, especially on several sequential days.
- Acclimatization (and other individual risk factors - See reverse side).
- Time (length of heat exposure, especially sequential days and recovery time allowed)

Warning Signs and Symptoms of Heat Stress and Illness

With any of the below symptoms or signs, immediately call for medical evaluation by a 91W (Medic). If 91W is not immediately available, call for Medevac or ambulance.

| Indications of Possible Heat/Casualty | |
|--|---|
| <p>MORE COMMON SIGNS/SYMP TOMS</p> <ul style="list-style-type: none"> • Dizziness • Headache • Nausea • Unsteady walk • Weakness or fatigue • Muscle cramps | <p>IMMEDIATE ACTIONS</p> <ul style="list-style-type: none"> • Remove from training • Allow casualty to rest in shade • Loosen clothing • Take sips of water • While doing the above, call for a Medic to evaluate the soldier (Medic will monitor temperature and check for mental confusion) • If no Medic is available call for ambulance or Medevac |
| <p>SERIOUS SIGNS/SYMP TOMS</p> <ul style="list-style-type: none"> • Hot body, high temperature • Confusion, agitation (Mental Status Assessment) • Vomiting • Involuntary bowel movement • Convulsions • Weak or rapid pulse • Unresponsiveness, coma | <p>Immediately call Medevac or ambulance for emergent transport while doing the following:</p> <ul style="list-style-type: none"> • Lay person down in shade with feet elevated until Medevac or ambulance arrives • Undress as much as possible • Aggressively apply ice packs or ice sheets • Pour cold water over person and fan • Give sips of water while awaiting ambulance (if conscious) • Monitor airway and breathing until ambulance or Medevac arrive |
| Mental Status Assessment | |
| <p>An important sign that the soldier is in a serious life-threatening condition is the presence of mental confusion (with or without increased temperature). Anyone can do a mental status assessment asking some simple questions.</p> <p>Call for emergency Medevac or ambulance if any of the following exist:</p> <ul style="list-style-type: none"> - What is your name? (Does not know their name.) - What month is it? What year is it? (Does not know the month or year.) - Where are we/you? (Is not aware of location or surroundings) - What were you doing before you became ill? (Does not know the events that led to the present situation.) | |
| Indications of Possible Water Intoxication (Over Hydration) | |
| <p>Signs and Symptoms: Confusion, Weakness, and Vomiting</p> <p>What to do:</p> <p>Ask these questions to the soldier or battle buddy:</p> <ul style="list-style-type: none"> • Has soldier been eating? Check rucksack for # of MRE's left. • Has soldier been drinking a lot? (suspect water intoxication if soldier has been drinking constantly) • How often has soldier urinated? (frequent urination seen with water intoxication; infrequent urination with heat illness) • What color is urine (clear urine may indicate over hydration) <p>If soldier has been eating, drinking and urinating a lot, yet has these symptoms, immediately call Medevac or ambulance for emergency transport.</p> | |



For additional copies contact: U.S. Army Center for Health Promotion and Preventive Medicine (600) 222-9698.
Also see <http://chppm-www.apgea.army.mil/heat> for electronic versions of this document and other heat injury prevention resources.

SOF RELATED BOOK LIST

The following is an compiled list of SOF related books recommended for your reading by those that were there. The list is complements of Len Blessing with the assistance of all of you. If anyone has other books they would like to add to the list, let us know. I have not read each selection personally. Its intent is to present a concise list of the vast array of reading material available that pertains to the mission of Special Operations - both past and present.

Every attempt is made to maintain the list's integrity with respected and legitimate works. Readers who feel a selection does not merit inclusion are encouraged to contact me with disputes. I also strongly encourage readers to write a short review for the books they have read and/or have personal first hand knowledge concerning a specific selection. This will help maintain a high degree of content validity.

I am happy to submit your comments/reviews on your behalf if you prefer to not write directly to the JSOM editor staff. I can be contacted at lenblessing@comcast.net.

Len Blessing

| TITLE | AUTHOR |
|---|---------------------------------------|
| 15 Months In SOG | Thom Nicholson |
| A Concise History of US Army Special Operations Forces, with Lineage and Insignia | Geoffrey T. Barker |
| A Very Short War (about the last gunfight and the last sacrifices of the Vietnam-era war in the recovery of the crew and ship SS Mayaguez in 1975) | John F. Guilmartin, Jr |
| Advice and Support: The Early Years Airborne and "Special Forces" (non-fiction, good quick references, especially for family or civilians) | Ronald H. Spector Hans Halberstadt |
| Battle for the Central Highlands: A Special Forces Story | George E Dooley |
| Beyond Nam Dong | Roger Donlon |
| Blackjack -33: With Special Forces in the Viet Cong Forbidden Zone | James C Donahue |
| Blackjack -34 (Previously titled "No Greater Love") | James C Donahue |
| Bravo Two Zero | Andy McNab |
| Break Contact Continue Mission (fiction) | Raymond D. Harris |
| Bunard: Diary of a Green Beret | Larry Crile |
| Che Guevarra on Guerrilla Warfare | Ernesto Gueverra |
| Code Name Bright Light | George J. Veith |
| Code Name: Copperhead | SGM Joe R. Garner (Ret.) |
| Covert Warrior | Warner Smith |
| Edward Lansdale: The Unquiet American | Cecil B. Currey |
| Elite Warrior | Lance Q. Zedric |
| Fighting Men: Stories of Soldiering | Jim Morris |
| Five Years To Freedom | James N. Rowe |
| From OSS to Green Berets | Col. Aron Bank (Ret) |
| Ghost Soldiers: The Epic Account of World War II's Greatest Rescue Mission (Ranger operation to free POWs in the Philippines) | Hampton Sides |
| Green Berets At War | Shelby L. Stanton |
| Green Berets at War: US Army Special Forces in Asia 1956-1975 | Shelby L. Stanton |
| Green Berets in the Vanguard: Inside Special Forces 1953-1963 | Chalmers Archer Jr |
| Guerrilla Warfare: On Guerrilla Warfare | Mao Tse tung |
| Hard To Forget | Steven M. Yedinak |
| Hazardous Duty | MG Jack Singlaub (Ret) |

| TITLE | AUTHOR |
|--|----------------------------|
| Ho Chi Minh: A Life | William J Durker |
| I Served | Don C. and Annette R. Hall |
| In The Village of the Man | Loyd Little |
| Inside Al Qaeda, Global Network of Terror | Rohan Gunaratna |
| Inside Delta Force: The story of America's elite counterterrorist unit | Eric L. Haney |
| Inside the Green Berets: The First Thirty Years | Charles M. Simpson III |
| Killing Pablo: The Hunt for the World's Greatest Outlaw (read by current SF medic that knows some of the guys involved in getting Pablo; told him that the book is pretty accurate, except what happened in the actual killing.) | Mark Bowden |
| Laos: War and Revolution | Nina S. Adams (Ed.) |
| Logistical Support of Special Operations Forces During Operations Desert Shield and Desert Storm | Donald W. Betts |
| Long Shadows (fiction) | Kent White |
| Lost Crusade: America's Secret Cambodian Mercenaries | Peter Scott |
| MAC-V-SOG Command History Vol. I & II | Charles F. Reske |
| Medal Of Honor | Roy P. Benavidez |
| Mike Force | L H. Burrus |
| Mobile Guerrilla Force: Wth the Special Forces in Warzon D | James C Donahue |
| My Secret War | Richard S. Drury |
| Night Jungle Operations | Thomas B. Bennett |
| Night of the Silver Stars: The Battle of Lang Vei | William R Phillips |
| No Surrender (Japanese soldier who evaded capture and survived 30 years in the Philippines; it's a great book about perseverance and commitment to warrior ideals) | Hiroo Onoda |
| Once A Warrior King: Memories of an Officer in Vietnam | David Donovan |
| One Day Too Long | Timothy N. Castle |
| OSS to Green Berets | Aaron Bank |
| Parthian Shot | Loyd Little |
| Peoples' War, Peoples' Army | Vo Nguyen Giap |
| Perilous Options: Special Operations as an Instrument of US Foreign Policy | Lucien S. Vandenbroucke |
| Phantom Warriors, Book II | Gary A. Linderer |
| Phantom Warriors: LRRPs, LRP's, and Rangers in Vietnam, Book I | Gary A. Linderer |
| Prairie Fire (fiction) | Kent White |
| Project Omega: Eye of the Beast | Ernie Acre |
| Rangers at War: Combat Recon in Vietnam | Shelby L. Stanton |
| Reflections Of A Warrior | Franklin D. Miller |
| Rescue Of River City | Drew Dix |
| SF Bibliography: Collection of articles and other readings with Special Forces topics | Radix Press/Dan Godbee |
| Shadow War: Special Operations and Low Intensity Conflict | H.T. Hayden |
| Shadow Warriors: Inside the Special Forces | Carl Stiner and Tomy Koltz |
| Sideshow (the US, Khymer Rouge & Cambodia) | Robert Showcross |
| SOG and SOG Photo Book | John Plaster |
| SOG: Volume 1 | Harve Saal |
| Soldier Under 3 Flags | H. A. Gill (PB) |
| SPEC OPS: Case Studies in Special Operations Warfare: Theory and Practice | William H. McRaven |
| Special Forces 1941-1987 | LeRoy Thompson |
| Special Forces of the US Army | Ian Sutherland |
| Special Forces, the US Army's experts in Unconventional Warfare | Caroll B. Colby |

| TITLE | AUTHOR |
|---|----------------------------------|
| Special Forces: A guided tour of US Army Special Forces | John Gresham |
| Special Men and Special Missions: Inside American Special Operations Forces, 1945 to the Present | Joel Nadel and J.R. Wright |
| Spies And Commandos | Kenneth Conboy |
| Strategy and Policy Background Umbrella Concept for Low Intensity Conflict | Alex & Hamilton Booz |
| Street Without Joy (French in Indochina; Good groundwork for SF in Vietnam) | Bernard B. Fall |
| Talking with Victor Charlie: An Interrogator's Story | Sedgwick D. Tourison, Jr. |
| Tam Phu | Leigh Wade |
| The Chindit War (good section on Merrill's Marauders) | Shelford Bidwell |
| The Company They Keep | Anna Simons |
| The Devil's Brigade | Robert H. Adleman |
| The Dying Place (fiction) | David A. Maurer |
| The Green Berets | Robin Moore |
| The Green Berets in Vietnam, 1961-71 | Francis J. Kelly |
| The Last Confucian | Denis Warner |
| The Making of a Quagmire | David Halberstam |
| The Montagnards of South Vietnam | Robert L. Mole |
| The New Legions | Donald Duncan |
| The One That Got Away (This is the other half of the Bravo Two-Zerostory [a very good read on human endurance and tenacity]) | Chris Ryan |
| The Politics of Heroin in SE Asia (essential reference for understanding the Golden Triangle) | Alfred McCoy |
| The Protected Will Never Know | Leigh Wade |
| The Raid | Benjamin F. Schemmer |
| The Ravens (the classic about our Bird Dog brothers) | Christopher Robbins |
| The Rescue Of Bat-21 | Darrel D. Whitcomb |
| The Road to Arnhem: A Screaming Eagle in Holland | Donald R. Burgett |
| The Secret War Against Hanoi: The Untold Story of Spies, Saboteurs and Covert Warriors in North Vietnam | Richard H Shultz Jr |
| The Secret Wars: A Guide to Sources in English, Volume II, Intelligence, Propaganda and Psychological Warfare, Covert Operations, 1945-1980 | Myron J. Smith |
| Tragedy in Paradise: A country Doctor at War in Laos | Charles Weldon MD |
| Umbrella Concept for Low Intensity Conflict | Alex & Hamilton Booz |
| Unconventional Operations Forces of Special Operations | Mark D. Boyatt |
| Uneasy Warrior | Vincent Coppola |
| Urgent Fury: The Battle for Grenada | Mark Adkin |
| U S Army Special Operations in World War II | David W. Hogan Jr. |
| U S Special Forces | Peter McDonald |
| U S Army Special Forces 1952-84 | Gordon L. Rottman |
| U S Army Handbook for North Vietnam Dept. of Army: 550-57 | |
| U S Army Handbook for Cambodia Dept. of Army: DA Pam: 550-50 | |
| U S Army Handbook for Laos Dept. of Army: DA Pam: 550-58 | |
| U S Army Handbook for South Vietnam Dept. of Army: DA Pam: 550-55 | |
| U S Army Handbook: Minority Groups in the Republic of Vietnam: Ethnographic Series Dept. of Army:DA Pam: 550-105 | |
| Vietnam Above The Tree Tops: A Forward Air Controller Reports | John F Flanagan |
| Vietnam in American Literature | Philip H. Melling |
| Vietnam Military Lore: Legends, Shadow and Heroes | Master Sergeant Ray E Bows (Ret) |
| Vietnam Order of Battle: A Complete, Illustrated Reference to the US | Shelby Stanton |

Book Review

WHERE THERE IS NO DOCTOR: A Village Health Care Handbook

Second edition. Revised 1992, updated 2002. David Werner, with Carol Thuman and Jane Maxwell. Paperback. 446 pages. Hesperian Foundation. ISBN: 0-942364-15-5. \$17.00 USD.

Reviewed by: Mitch Meyers, MD

SOF medics wear a lot of hats these days and we are routinely expected to accomplish a wide variety of medical missions in primitive and austere conditions. Whether doing GW, JCETs, MEDCAPs, or other humanitarian aid, practicing good medicine in bad places can be made much easier if we take a good reference such as *Where There Is No Doctor: A Village Health Care Handbook* with us into our AO.



Used by over a generation of Special Forces medics and having survived the tests of time, this book has become the most widely used and accessible health manual in the world. It is especially written for village health care workers and people living in and traveling through isolated villages and fringe communities of poor countries.

This book is issued to all Peace Corps volunteers and UN field workers, as well as many members of the WHO and various NGOs going to developing

countries. It is commonly carried by missionaries like a health care bible for the poor and downtrodden. Its use probably has done more to decrease deaths and alleviate the burden of suffering from preventable diseases in underdeveloped countries than any other health book ever published.

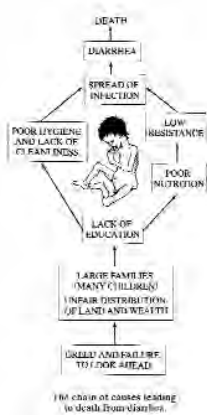
The book owes its success to its primary author and illustrator, David Werner. Nearly 40 years ago he helped to form a health care network among farmers living in some of the mountainous areas of Mexico. As a reference and to help teach the local healers he wrote the first version of this book: *Donde No Hay Doctor: Una Guia Para Los Campesinos Que Viven Lejos de Los Centros Medicos*. The book became extremely popular and he had the first English edition published in 1977. Since then it has undergone a few revisions, been translated into 90-plus languages, and is used in over 100 countries around the world. This grassroots book has benefited from the experience and input of hundreds of community health workers and the medical lessons they learned working in remote areas of the world. Many SOF medics have probably contributed as well.

I see several factors that contribute to the popularity of the book.

One, it offers a unique approach. It is a humanistic book that goes far beyond simple first-aid and medical treatment. It places strong emphasis on primary prevention, health care teaching, education, and



HAVE COMPASSION.
Kindness often helps more than medicine. Never be afraid to show you care.



encouraging healthy lifestyle practices. For example, Werners' community-based health perspective doesn't just tell readers how to diagnose and treat a patient for diarrhea. It challenges them to look at the preventable underlying factors that contributed to the diarrhea in the first place, such as poor sanitation and hygiene practices in the village. Therefore, it



Encourage people to make the most of local resources.



BREAST MILK—A TOP QUALITY LOCAL RESOURCE—BETTER THAN ANYTHING MONEY CAN BUY!

places less emphasis on reactive treatment and more emphasis on proactive prevention.

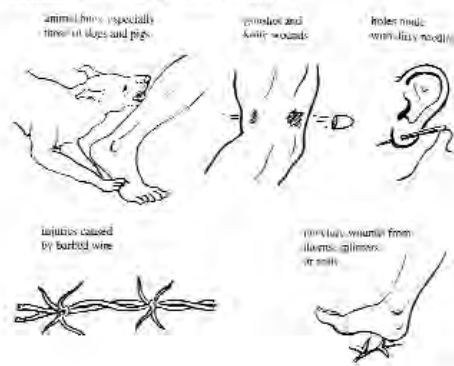
Two, the K.I.S.S. Principle. He deliberately made the manual easy to read so that people without much formal education or English fluency could still understand and use

it. The language is kept simple and instead of using lofty medical words such as “feces”, or “excrement”, he uses the word “shit” where deemed appropriate.

Three, since a picture can be worth a thousand words and transcend all language barriers, he placed several useful illustrations throughout the book to keep it visually interesting and to reinforce the text.

Four, he helped to keep it cheap. The book is published and distributed by the nonprofit Hesperian Foundation. This 400+ page paperback volume costs only \$17 in the USA, and may be purchased at half

WOUNDS VERY LIKELY TO CAUSE TETANUS



that price in various poor countries that get a special rate. Additionally, the Hesperian Foundation allows anyone to copy any part of the manual as long as they distribute it for free or at cost.

And lastly, he takes a realistic perspective and stays focused on medical conditions commonly encountered in poor, underdeveloped countries, and the treatment resources actually accessible there. He discusses field expedient treatments using readily available items and inexpensive generic medications. He gives examples of how people have improvised, adapted, and overcome the limitations of poverty and their environment to meet health care challenges.



The handbook contains five color-coded sections for ease of use.

The brown pages are words of advice to village health workers on how to talk to patients, how to treat them as human beings with dignity, how to teach them about health and hygiene, and how to do a medical area assessment and study of their community.

The white pages are the main part of the book and contain 23 chapters on prevention and medical diagnosis and treatment. There is a little of

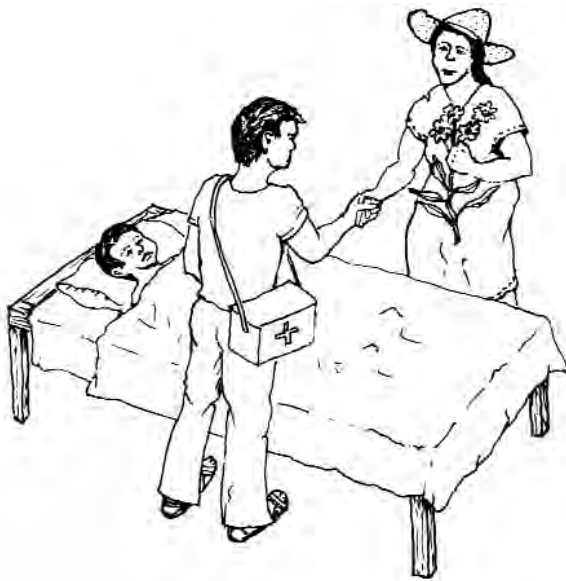


THE VILLAGE HEALTH WORKER LIVES AND WORKS AT THE LEVEL OF HIS PEOPLE. HIS FIRST JOB IS TO SHARE HIS KNOWLEDGE.

everything here and I like to think of this section as a *Merck Manual* for underdeveloped countries. The chapters include medical anthropology, physical examination, nutrition, tropical medicine, first aid, OB-GYN, pediatrics, gerontology, family plan-



ning, and common surgical procedures that can be performed in a field environment with little equipment. These chapters are chock full of pearls and show numerous ways that medics can improvise, adapt, and overcome obstacles in the way of health



care delivery with limited financial and material resources.

The green pages provide information on commonly prescribed and inexpensive generic medications from the WHO List of Essential Drugs. These pharmaceuticals are often purchased in developing countries without a physician's prescription. The book also mentions the use of veterinary drugs for human consumption since these may be more readily available or purchased for far less money. This is information that may be useful for partisan sympathizers or guerilla medics trying to obtain medicines without raising much suspicion.

The blue pages contain updated information

for the Revised Edition and covers such topics as AIDS, pesticide poisoning, drug addiction, and abortion complications.

The yellow pages are the index.

Whether in the setting of conventional or unconventional war, HA or MOOTW, this book has much to offer to the SOF Medic. As ambassadors of goodwill, medics always lead the way. Distributed and used appropriately as a reference manual, this book can be an empowerment tool. We know from experience that empowering some of our less educated and less fortunate neighbors to gain control over their own health and the health of their families can have a profound impact on the quality and quantity of their lives. It has always been one of the best ways for our military to win foreign hearts and minds. Consider taking a copy with you into your AO and leave it behind with one of your indigenous helpers when you leave. It's a gift that will keep on giving.

As medical force multipliers, we need to train our indigenous allies to become competent medics who in turn can train-up their own medics, and in effect, work ourselves out of a job. This book has widely been used OCONUS as an effective health-care training manual. Designing lesson plans and POI around it is relatively easy, especially because it has been translated into so many languages. For this reason medics can also use it to maintain or improve their foreign language proficiency.

Where There Is No Doctor should be on the mandatory reading list for every SOF medic. It can be found in the SF Medical Bookset (NSN: 7610-01-202-8060).

Editor's Note: In regards to using pictures from the manual for this book review, the following is listed in the front matter of the book: "Any parts of this book, including the illustrations, may be copied, reproduced, or adapted to meet local needs, without permission from the author or publisher, provided the parts reproduced are distributed free or at cost-not for profit."



MAJ Mitch Meyers is a former Special Forces medic, now preventive medicine and public health physician, and battalion surgeon for the 1st Bn, 1st SFG(A) at Torii Station, Okinawa, where he is he is working, training, and living the dream at the "Forward Edge of Freedom."

Correspondence
Letters to the Editor & Apologies to the Readers

I have been receiving your publication on a personal subscription. Our Tactical team / Element commander had informed us there was no extra training funds to subscribe to publications, so I had to subscribe myself. The information on austere medicine is so relevant to our duties with team care; I wish more Tactical Medics would see the wisdom in this information & subscribe themselves.

Yours in public Safety & Service
Stephen D. Schaeffer

I've gotten ahold of a copy of the Journal of Special Operations Medicine recently. What a fantastic publication! How do I get a subscription to it?

Thanks
1Lt Chris Crocker

JSOM,

I wanted to let you know what a great publication you have developed. I am interested in developing an article(s) for submission. I would like to know if you have a list of topics that are in need of being written. I am going on a deployment soon and I thought this might be a great time to work on a topic. My current ideas include a review of penetrating neck injuries and a review of frostbite and hypothermia injuries. I would appreciate any guidance you may offer as I would like to contribute to the journal. Thank you for your assistance.

Regards,
Kevin Aston, DO, HHC 2/135 INF(AASLT)

Editorials

John M Wightman, MD

MAJ Jarvis has provided a quality review of an important topic to the SOF community. Concussions occur from a variety of mechanisms during off-duty activities, training accidents, and real-world operations. The SAC is an objective tool like the more familiar Glasgow Coma Scale (GCS), which can be used in the evaluation of cerebral function. Changes over time are more important than a single value, especially if the first score is at or near the individual's baseline [if known] or some absolute "normal" value (if a baseline is not known). It probably has a place at the first echelon of care where a physician assistant or physician is available. There also, a grading scale may be important in determining subsequent evaluation and management options, which in turn determine evacuation decisions.

For those in the field, diagnosis is usually not wherein the difficulty lies. In the setting of a consistent mechanism of injury, any symptom listed in Table 1 defines a concussion just as well as any objective finding such as LOC, seizures, vomiting, or neurological deficits. The American Academy of Neurology (AAN) grades may be the best rapid field assessment for concussion. The revised Cantu grades cannot be differentiated until at least 24 hours after injury. The Colorado Medical Society grades do not take into account changes over time. The AAN allows for the use of "concussion symptoms" and a grade can be assigned 15 minutes after injury.

Unfortunately, there seems to be no evidenced-based literature concerning the appropriate management of military members who sustain concussions during airborne operations or other activities in the field environment. The SOF Medical Handbook does not address mild TBI. Despite the paucity of data or published algorithms, medics and corpsmen must still deal with the problem of deciding on the best disposition for casualties they know to have sustained a concussion, but in whom symptoms and signs are improving or have already resolved. The return-to-play guidelines for athletes would suggest that all individuals with concussions be removed from activities at risk for additional injury. In the military setting, this would effectively mean evacuation of all casualties in whom the diagnosis of concussion was made, regardless of grade. When an evacuation would result in abortion of a mission or potential compromise of a team or unit, this may not be the best course of action.

Casualties must first present with no history of LOC and a GCS of 14 or 15 to be considered for retention in the field setting. A 14 might represent the "transient confusion" in the AAN guidelines, but it must return to 15. Any LOC or persistent symptoms should trigger the need for CT, ideally within the next 6 hours. Any pupillary change or focal neurological deficit should prompt immediate evacuation to a location with CT and the potential for neurosurgical intervention. Those with a GCS of 15 and complete resolution of symptoms might be considered for retention in the field, as long as they are not placed at undue risk for a second head injury.

Postconcussive syndrome was not discussed in the article, but is an important consideration in return-to-duty decisions. The hallmarks are persistent headaches or dizziness (either of which can lead to nausea and vomiting), difficulty concentrating, or problems with memory. These residual symptoms are actually expected for up to 24 hours in as many as 80% of concussed patients. Unless progressively worsening, they are generally not of any long-term health concern, even if they last three to five days after injury. However, they may sufficiently impair an individual's function for the duration they are present.

The bottom line is that medical professionals must care for the patient to the best of their abilities in the circumstances they encounter, but they must make the tactical commander aware that any individual, who has sustained a concussion, may not be capable of performing at peak efficiency.

John M Wightman, EMT-T/P, MD, MA
Lt Col, USAF, MC, FS

Med Quiz

Daniel J. Schissel, MD

Picture This....

As you approach the end of your 179-day rotation at FOB Desert 2 outside of Fallujah, Iraq your team sergeant catches you on the way to the chow hall. “Hey Doc! This thing on my face is oozing on my sunglasses. Do you have anything to kill it?” He is otherwise healthy, taking only doxycycline, and has no allergies. He states that the lesion started as a “small zit a few weeks ago and just never heals.”



Question 1:

- a) Using the primary lesion definitions outlined in your SOF medical handbook, how would you describe the morphology of this lesion?

- b) What is your differential diagnosis for a non-healing, small, well-demarcated papule, which may have ulcerated, had a rolled border, or has enlarged into a nodule or plaque located on chronically sun-exposed skin?

As you sit down at the table for that quick lunch you notice a lesion on his arm.

Question 2:

- a) Using the primary lesion definitions outlined in your SOF medical handbook, how would you describe the morphology of this lesion?
- b) What is your differential diagnosis for a non-healing small, well-demarcated plaque, which may have ulcerated, had a rolled border, or has enlarged into a nodule, on chronically sun-exposed skin?



Answers

Question 1:

a) Morphology: Small, well-demarcated, erythematous plaque with a slightly raised border.

b) Differential Diagnosis:

| | | |
|------------------------|---------------------------|-----------------|
| Basal cell skin cancer | Squamous cell skin cancer | Bowen's Disease |
| Discoid Lupus | Leishmaniasis | Impetigo |
| Tinea | Granuloma faciale | |

Question 2:

a) Morphology: Small, well-demarcated, erythematous plaque with a slightly raised border and serous crusting.

b) Differential Diagnosis:

| | | |
|------------------------|---------------------------|-----------------|
| Basal cell skin cancer | Squamous cell skin cancer | Bowen's Disease |
| Lupus Erythematosus | Leishmaniasis | Tinea |

“Baghdad sore” (Cutaneous Leishmaniasis)

Leishmaniasis is a chronic disease caused by protozoal infection. It is endemic to Africa, Asia, the Middle East, the Mediterranean region, and South America. For simplicity, there are three basic clinical variations of leishmaniasis: (1) strictly cutaneous; (2) mucocutaneous, affecting the mucous membranes and the skin; and (3) visceral, affecting the reticulo-endothelial system.¹

During your med planning and research through AFMIC you learned that there are four species of leishmania in Afghanistan and Iraq: *L. major*, *L. tropica*, *L. infantum*, and *L. donovani*. Each of these species has a different clinical presentation and treatment.

The localized cutaneous form of leishmaniasis is the most common in the Middle Eastern region where you have been operating “Baghdad sore.” However, the species of leishmaniasis causing cutaneous disease may vary within the region. *L. major* is commonly isolated in rural areas, while *L. tropica* is more likely in urban areas. To date (March 2004) all 264 cases from Iraq have been cutaneous, caused by *L. major*.^{2,3} Nonetheless, recall that the visceral form has a worldwide distribution and is most commonly found in Africa, Asia, and the Middle East, and is associated with *L. donovani* or *L. infantum*.

This parasitic infection is transmitted by female sandflies, mainly between canine and rodent primary animal reservoirs (see Life Cycle page 72.) Humans are an accidental host when we invade the natural habitat. Human-to-human transmission is not common; the *amastigote* is unable to penetrate intact skin. If one's cutaneous barrier is broken, serous drainage from a lesion can permit transfer of the organism.⁴

The “Baghdad sore” typically begins as a small one to two millimeter papule that evolves into a nodule or plaque on exposed areas. The lesions typically ulcerate or develop a verrucous appearance. Cutaneous lesions of *L. major* are typically self-limited and resolve spontaneously. This spontaneous resolution should not reassure the patient nor the caregiver, for some develop a chronic or disseminated infection.

The diagnosis of leishmaniasis can easily be established by demonstrating the presence of amastigotes in dermal macrophages from a punch skin biopsy taken from the ulcerative margin. Diagnosis by polymerase chain reaction (PCR) and culture for species identification is available at the Leishmaniasis Diagnostic Laboratory (LDL) at the Walter Reed Army Institute of Research (WRAIR). If a patient no longer has an active skin lesion, serologic and immunologic tests may confirm the diagnosis.

The current standard of care for all forms of leishmaniasis is a ten to twenty day treatment course of pentavalent antimony (Pentostam®). The treatment course is dependent upon the sites and extent of disease. (Pentavalent antimonial is presently available only at our major referral centers, or OCONUS, but may be released to local facilities in the future). Other treatment modalities for cutaneous presentations include localized lesional heat or cryo therapy, intralesional antimalarials, oral itraconazole or ketoconazole, and intravenous amphotericin B.^{2,3}

If you are deployed and have a concern about a puzzling skin lesion, you can contact our Operational Tele dermatology site at DERM.CONCONSULT@US.ARMY.MIL or me directly at Daniel.schissel@us.army.mil with a good description of the primary lesion and a digital photo. The lesion you describe just may make its way to *Picture This...*

**A special acknowledgement to MAJ Michal Bryan, MC, M.D., USAF for the use of clinical photo #1 .*

REFERENCES

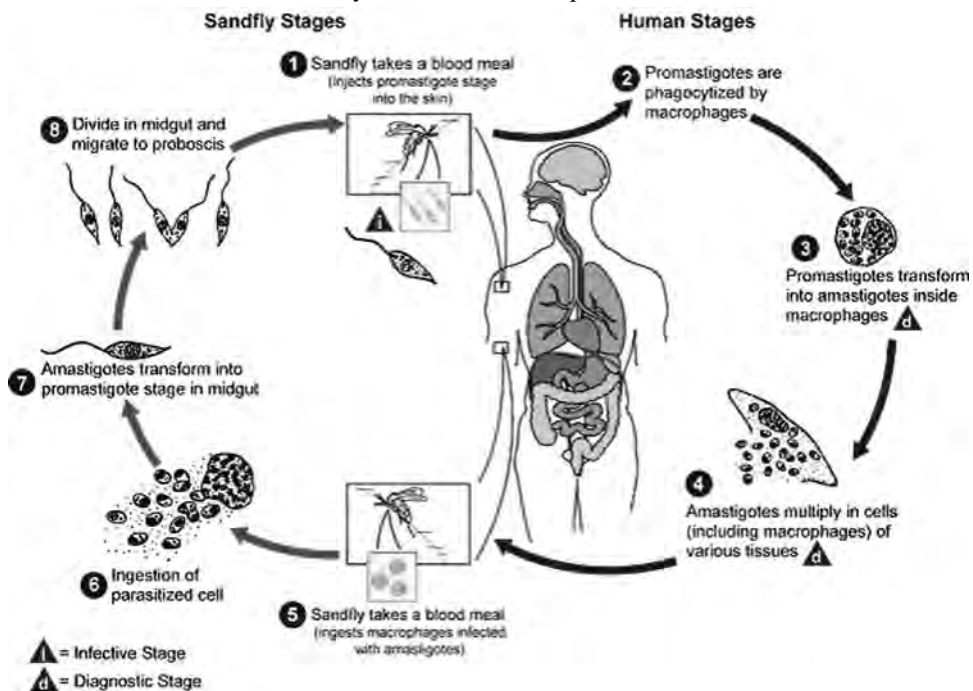
1. Textbook of Military Dermatology, OTSG publication, TMM Publications, 1994, 256-263.
2. BACH Leishmaniasis Management SOP V1.0 29 Jan 2004.
3. Conversation with LRMC dermatology and WRAMC leishmaniasis treatment center Feb 2004.
4. Clinical Parasitology 9th edition, Beaver, Lea & Febiger, Philadelphia, 1984, 58-77.



LTC Daniel Schissel is a 1993 graduate of the Uniformed Service University of the Health Sciences. He completed his internship with the family practice department at Fort Bragg in 1994. He then served as the 2/10th Special Forces Group (Airborne) and followed on as the 10th SFG(A) Group Surgeon. He completed his residency training in dermatology at the Brooke Army Medical Center in 1999. LTC Schissel is presently station in Heidelberg, Germany as a staff physician and the European Regional Medical Command Dermatology Consultant. He has authored the dermatology section of the new SOF manual, serves on the USSOCOM Medical Curriculum & Examinations Board, and is the US Army Aviation Dermatology Consultant.

From the Editor: The following was taken from the CDC website: www.dpd.cdc.gov/dpdx/HTML/Leishmaniasis.htm. This information is public domain and is intended to accompany the MED QUIZ “Baghdad sore” (Cutaneous Leishmaniasis).

Life Cycle: Leishmaniasis is transmitted by the bite of female phlebotomine sandflies. The sandflies inject the infec-



tive stage, promastigotes, during blood meals ①. Promastigotes that reach the puncture wound are phagocytized by macrophages ② and transform into amastigotes ③. Amastigotes multiply in infected cells and affect different tissues, depending in part on the *Leishmania* species ④. This originates the clinical manifestations of leishmaniasis. Sandflies become infected during blood meals on an infected host when they ingest macrophages infected with amastigotes (⑤, ⑥). In the sandfly's midgut, the parasites differentiate into promastigotes ⑦ which multiply and migrate to the proboscis ⑧.

Geographic Distribution: Leishmaniasis is found in parts of about 88 countries. Approximately 350 million people live in these areas. Most of the affected countries are in the tropics and subtropics. The settings in which leishmaniasis is found range from rain forests in Central and South America to deserts in West Asia. More than 90 percent of the world's cases of visceral leishmaniasis are in India, Bangladesh, Nepal, Sudan, and Brazil. Leishmaniasis is found in Mexico, Central America, and South America -- from northern Argentina to southern Texas (not in Uruguay, Chile, or Canada), southern Europe (leishmaniasis is not common in travelers to southern Europe), Asia (not Southeast Asia), the Middle East, and Africa (particularly East and North Africa, with some cases elsewhere).

Clinical Features: The factors determining the form of disease (strictly cutaneous; mucocutaneous, affecting the mucous membranes and the skin; and visceral, affecting the reticulo-endothelial system) include leishmanial species, geographic location, and immune response of the host. Cutaneous leishmaniasis is characterized by one or more cutaneous lesions on areas where sandflies have fed. Persons who have cutaneous leishmaniasis have one or more sores on their skin. The sores can change in size and appearance over time. They often end up looking somewhat like a volcano, with a raised edge and central crater. A scab covers some sores. The sores can be painless or painful. Some people have swollen glands near the sores (for example, in the armpit if the sores are on the arm or hand). Persons who have visceral leishmaniasis usually have fever, weight loss, and an enlarged spleen and liver (usually the spleen is bigger than the liver). Some patients have swollen glands. Certain blood tests are abnormal. For example, patients usually have low blood counts, including a low red blood cell count (anemia), low white blood cell count, and low platelet count. Some patients develop post kala-azar dermal leishmaniasis. Visceral leishmaniasis is becoming an important opportunistic infection in areas where it coexists with HIV.

Treatment: Pentostam (sodium stibogluconate; sodium antimony gluconate), an investigational drug, is a pentavalent antimony compound. It is the drug of choice for visceral leishmaniasis (kalaazar) caused by *Leishmania donovani* and for cutaneous leishmaniasis (oriental sore) caused by *Leishmania tropica*. Pentostam is also useful in the therapy of mucocutaneous leishmaniasis caused by *Leishmania braziliensis*. Pentostam has been used outside the United States since 1948 with reports of high cure rates.

Photo Gallery



An 18D sergeant is starting an IV on a wounded SF soldier whose face was blurred to protect his privacy.

A preventive medicine officer for Civil Affairs shakes hands with local village leaders before starting a Medical Civic Action Program. The Combined Joint Task Force--Horn of Africa funded project treated more than 450 villagers during the four days spent in the region.



MEDCAP mission at a rural school built by an army brigade outside Balad, Iraq. SF personnel supported pediatric care for over 60 elementary school students.





This came in from some Marines with the First Division after one Marine found that he was sharing his sleeping accommodations. Even though camel spiders aren't venomous, their bites are nasty, and full of bacteria and pre-digestive fluids.

Editor's Note: This is not an official photo. Anyone who has ever had the displeasure of coming across one of these creatures knows they do not grow this large; in fact, a large one may have up to a 5" leg span. This urban legend photo misconstrues the size of the arachnid because of its strange camera angle. I still wouldn't want to find one in my sleeping bag!

A Special Forces PA, prior 18D, removing an abscess from a Thai's rear end. Yep, there he was . . . Photo taken during a MEDCAP mission in Northern Thailand during Cobra Gold 2003.



SOF medics transport an injured SF soldier to an awaiting MEDVAC in Afghanistan. The faces have been blurred to protect their identity.

Journal of Special Operations Medicine

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Volume 4, Edition 2 / Spring 04

Dedication

Master Sergeant Michael Maltz and Senior Airman Jason Plite, both pararescueman with the 41st Rescue Squadron, Moody AFB, died enroute on a humanitarian mission to aid two Afghani children who were seriously injured. All six crew members lost their lives when their helicopter crashed in southeastern Afghanistan on March 23, 2003 .

I sit here and type this with tears in my eyes,
the world is not right now, I just lost two guys.

Flying to rescue someone they'd save,
their helo just crashed, an H-60 PAVE.

The helo they flew in crashed to the ground,
leaving only "survivors", their loved ones, around.

One was experienced, the other still new,
they died in the service of both me and you.

They both knew the risks, we accept them like faith,
but once in awhile, death rears like a wraith.

Of one thing I'm certain, they died not in vain,
if it were two others, they'd both fly again.

And fly again, the rest of us will,
if for no other reason then to keep our minds still.

To get back on that horse and ride it away,
to reinforce why we wear the maroon beret.

We lost two brothers and though we are sad,
we'll celebrate their lives, the lives they had.

Lives by the motto, lives we will give,
These Things We Do, That Others May Live.

written by CMSgt Robert Holler, 38 RQS, Moody AFB



Master Sergeant Michael Maltz

Mike was born on 19 Sep 1960 in Minneola, Long Island. He attended Half Hollow Hills High School, graduating in May of 1978 and joining the USAF in Aug 1978. Mike joined Pararescue in Dec of 1985, earning class honor graduate.

During Mike's almost 20 years as a PJ, he was assigned to rescue squadrons in Florida, Alaska, and Georgia. He also worked a stint as an instructor at Lackland AFB TX.

Mike led numerous rescue missions over the years. While at Eglin, Mike was a key player in the unit's search and recovery of the remains of Congressman Mickey Leland and his delegation that went missing in an airplane crash in Ethiopia in 1989.

In Alaska, he was hand picked to summit Mt McKinley as a member of a high-altitude rescue team. He would later lead the rescue of two German

climbers suffering frostbite and cerebral edema at the 20,000ft level of McKinley. This was the highest altitude rescue mission ever recorded.

At his assignment to the Pararescue Introductory Course at Lackland AFB, TX, Mike became very well known and earned the reputation as a fair, but hard line instructor – he was known as Iron Mike. His dedication to his PJ students was paramount and he always had a close bond. Although he was hard on the outside, inside he had a heart of gold.

Finishing out his last assignment at the 38th RQS at Moody AFB, GA, he had planned to retire at the end of 2002, to be closer to his sons. At the last minute, when his unit became strapped for team leaders in support of the GWOT deployments, he made the decision to stay for one more year.

Mike was doing what he loved best, and the reason he became a PJ————— to save lives. He made the ultimate sacrifice living by the PJ Motto ———“These Things We Do, That Others May Live”.

He leaves two sons.



Senior Airman Jason Plite

SRA Plite receiving the King
award from Chief Master
Sergeant Evans

After graduating from Grand Ledge High School in 1999, Jason Plite enlisted in the United States Air Force. At first he sought to pursue a career as a firefighter, but then Jason learned of the Pararescue profession and never looked back. After graduating Basic Training with honors, Jason began his PJ training with the Air Force Indoctrination Course, a US Navy Special Forces Combat Divers Course, and a Military Free Fall School. He was awarded the Charles D. King award for excellence in academic performance and leadership. In addition, Jason also successfully completed the Army Basic Airborne School, Air Force Survival School, Paramedic Upgrade Course, John F. Kennedy Warfare Center’s Joint Special Operations Medical Training Course, and the Pararescue Recovery Apprentice Course. Jason received his maroon beret in March 2002.

Just the day prior to the crash, Jason had helped save three critically injured Afghani Nationals.

Taps



It is with great sadness that we announce the death of COL Aaron Bank. He passed away peacefully 1 April 2004 in California. He was 101. Our thoughts and prayers are with his family. He has been and will continue to be an icon to all Special Forces Soldiers and will forever be known known as the “Father of the Green Berets.”

Retired Army COL Aaron Bank led a number of daring missions during World War II but was best known for his postwar role in organizing and serving as the first commander of the Army’s elite Special Forces. During World War II, Bank was a special operations officer for the Office of Strategic Services (OSS), the top-secret government agency formed to gather intelligence and organize resistance forces behind enemy lines. The OSS, forerunner of the CIA, was disbanded soon after the war. But Bank and others were convinced that the Army should have a permanent unit whose mission would be to conduct unconventional operations.

In 1951, the chief of the Army’s Psychological Warfare staff, who had been impressed by OSS Special Operations during the war, instructed Bank to staff and obtain approval for the creation of an OSS-style operational group. In 1952, after Bank and other key staff members had made their case, the Army approved 2,300 spaces for men in a Special Forces unit - the 10th Special Forces Group (Airborne) - at Ft. Bragg, NC. “I wanted none but the best,” Bank said in a 1968 interview with the Los Angeles Times. “First, they had to be double volunteers; that is, they had to volunteer for parachuting and behind-enemy-lines duties, which takes a special flair, a special type of personality. We had to work up all the manuals and training procedures for demolition, sabotage, new and different ways of handling weapons.” But most important, Bank said, “We had to teach them the classic aim and purpose of their service - the organizing of civilian natives into guerrilla forces in enemy-held territory.”

Bank later wrote a memorandum suggesting that Special Forces soldiers be allowed to wear berets as a mark of distinction. He listed three possible colors for the berets: purple, wine-red, or green. But the Army didn’t allow distinctive headgear at the time and the idea was turned down.

It wasn’t until 1962, four years after Bank retired from the military, that President John F. Kennedy authorized Army Special Forces to wear berets. Kennedy, Bank later said, “picked the green because he was an Irishman.”

Today there are about 7,700 soldiers in five active-duty and two National Guard Special Forces groups.



Continued Respect

At Ft. Bragg, which is still the home of the Green Berets, Bank is considered a military icon. “COL Aaron Bank is a legend within the Special Forces community. His commitment and service to our country is unsurpassed. He was a man far ahead of his time.... His vision and initiative allowed the Army to create Special Forces as we know them today,” said MAJ Robert Gowan, spokesman for the US Army Special Forces Command.

Born in New York City, Bank began working summers in his teens as a lifeguard and swimming teacher. He liked the work so much, he later said, that by the late 1920s it had become something of a career. “I’d go to Nassau in the Bahamas to work during the winter and then to Biarritz in southern France during the summer,” he recalled in the 1968 interview. “It was a plush life.”

He was in and out of Europe over the next decade and learned to speak French and German fluently. But in the late 1930s, sensing the inevitability of war, he returned home and joined the Army. By the time the

United States entered the war, Bank had been commissioned a second lieutenant.

In 1943, the 40 year-old Bank was serving as a tactical training officer to a railroad battalion stationed at Camp Polk, LA, when he saw a bulletin announcing that volunteers with foreign language capabilities would be interviewed for “special assignments.”

Once in the OSS, he said, he began a long training course that taught him “to do all the things that regular branches of the service frowned on” - guerrilla warfare, sabotage, espionage, and escape and evasion tactics.

He also learned parachuting. As commander of one of the three-man teams that dropped into southern France before the Allied Mediterranean invasion in August 1944, he and his men posed as civilians and helped French Resistance leaders organize a guerrilla force that blew up bridges, power lines and railroad tracks, and ambushed German columns.

Top-Secret Mission

In December 1944, Bank received what he considered the most extraordinary assignment of his career: to recruit and train 170 anti-Nazi German POWs and defectors who would parachute with him into the Austrian Alps, where they would pose as a German mountain infantry company.

The primary goal of the top-secret mission, dubbed Iron Cross, was to capture high-ranking Nazi leaders, including Adolf Hitler, who were expected to seek refuge in the area as the war in Europe neared an end.

Had the operation gone through and had they been successful in capturing Hitler, Bank told *The Times* in 1987, “the war would have been over overnight.” But in April 1945 - after three months of training in France - the mission was scrubbed. “I never cried in my life, but I damn near cried when they told me it was aborted,” Bank said in a 1993 *Times* interview.

Bank said he had heard two versions of why the mission was canceled. “One was that the American 7th Army was ready to crack into the Inn Valley. And it was a short time later that they did.” And because many of the Germans on the mission were pro-communist, he said, he heard that “the State Department didn’t want to drop a big team of party communists into Austria toward the latter part of the war.” Hitler, it turned out, was in Berlin at the time; he committed suicide on April 30, 1945. After the aborted Iron Cross mission, Bank was parachuted into the jungles of Indochina to search for Japanese prisoner-of-war camps. His team located 165 French internees at three different locations in the Vientiane area of Laos.

Bank, who also served in the Korean War, retired from the Army in 1958 and moved to San Clemente. In 1972, at age 70, he began working full time as chief of security at a private oceanfront community in Capistrano Beach, a job he held until he was 85.

Physically Fit

Extremely fit and vigorous most of his life, the 5-foot-8, 140-odd-pound Bank swam around the San Clemente pier every day until he was 74. He then took to running 40 minutes a day on the hilly streets near his home. Bank continued a daily regimen of lifting weights, riding a stationary bike, walking, and participating in an exercise class at the assisted-living facility in Dana Point until he was hospitalized three weeks ago.

Over the years, Bank wrote two books: “From OSS to Green Berets: The Birth of Special Forces” (Presidio Press, 1987); and “Knights Cross” (Birch Lane Press, 1993), a novel co-written with E.M. Nathanson, author of “The Dirty Dozen.” *Knights Cross* was based, in part, on Bank's real-life exploits with the aborted Iron Cross mission, but the novel had a twist: The mission to capture Hitler is not aborted and Bank’s fictional alter ego succeeds in capturing the German leader.

“I think of Aaron as a national treasure,” Nathanson told the *Times*. “He was a gracious gentleman and a dedicated warrior. There would seem to be a conflict between those two phrases, but they went together very well with him.”

Dennis McLellan, Los Angeles Times Staff Writer



SFA Chapter 75 Members Pictured Above:

Front Row: Adrian Silva (C-75 V.P.), COL (Ret.) Aaron Bank, Robert Jones (C-75 Sec.), & Catherine Bank
Back Row: Bill Sylvester, Steve Campbell, John Parker, Merle Eckles, Fred Lewis, Joe Hitt, & John Snow.

On Sunday, 23 November, 10 members of SFA Chapter 75 from San Diego, CA and their wives/girl-friends, attended the 101st birthday party for COL (Ret.) Aaron Bank.

The party was held at the Bank's beautiful assisted care facility in Dana Point, CA - "The Fountains at Sea Bluff" - and was also attended by 7 members of SFA Chapter 12 from Los Angeles and their spouses. Chapter 75 presented COL Bank with a floor-standing American flag for his apartment and he said "I'll salute it every day." The good Colonel also said to C-75 Vice-President, Adrian Silva, that "Special Forces always comes out for my birthday."

Colonel Bank spoke to the attendees twice - thanking everyone for coming to his birthday party and providing the 3 secrets to longevity: 1. Get a good nights rest; 2. Eat healthy food; 3. Exercise at least 12 minutes daily. It definitely appears COL Bank had followed his own rules, as he was in pretty darn good shape for a man his age. God bless him. We should all be that healthy if and when we reach that age.

It was a fabulous day and, hopefully, we'll be able to celebrate several more of these special occasions with the "Father of US Army Special Forces."

UNCONVENTIONAL WARFARE



UNCONVENTIONAL MEDICINE

UNCONVENTIONAL WARFARE



UNCONVENTIONAL MEDICINE

Special Forces Aidman's Pledge

As a Special Forces Aidman of the United States Army, I pledge my honor and my conscience to the service of my country and the art of medicine. I recognize the responsibility which may be placed upon me for the health, and even lives, of others. I confess the limitation of my skill and knowledge in the caring for the sick and injured. I promise to follow the maxim "Primum non nocere" ("First, thou shalt do no harm"), and to seek the assistance of more competent medical authority whenever it is available. These confidences which come to me in my attendance on the sick, I will treat as secret. I recognize my responsibility to impart to others who seek the service of medicine such knowledge of its art and practice as I possess, and I resolve to continue to improve my capability to this purpose. As an American soldier, I have determined ultimately to place above all considerations of self the mission of my team and the cause of my nation.



Pararescue Creed

I was that which others did not want to be. I went where others feared to go, and did what others failed to do. I asked nothing from those who gave nothing, And reluctantly accepted the thought of eternal lonlinessshould I fail. I have seen the face of terror; felt the stinging cold of fear, and enjoyed the sweet taste of a moment's love. I have cried, and hoped...but most of all, I have lived times others would say best forgotten. Always I will be able to say, that I was proud of what I was: a P.J. It is my duty as a Pararescueman to save a life and to aid the injured. I will perform my assigned duties quickly and efficiently, placing these duties before personal desires and comforts.



These things I do,
"That Others May Live."

Navy Poem

I'm the one called "Doc"... I shall not walk in your footsteps, but I will walk by your side. I shall not walk in your image, I've earned my own title of pride. We've answered the call together, on sea and foreign land. When the cry for help was given, I've been there right at hand. Whether I am on the ocean greens, Giving aid to my Marines. So the next time think of calling him "squid", those before him did. And there and your life is on the block, Look at the one right next to you... I'm the one called "Doc".



~ Harry D. Penny, Jr. USN Copyright 1975

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