Sports Specialty in Chiropractic Medicine

National University of Health Sciences

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- Associate Professor Clinical Sciences NUHS
- CCSP © Certified Chiropractic Sports Physician
- ICSC Internationally Certified Sports Chiropractor
- USOPC United States Olympic and Paralympic Committee Volunteer Medical Staff
- USABS (United States Skeleton and Bobsleigh) Volunteer Medical Staff
- FICC (Fellow of the International College of Chiropractors)
- 2016 ACA Sports Council Sports Chiropractor of The Year

Disclosure

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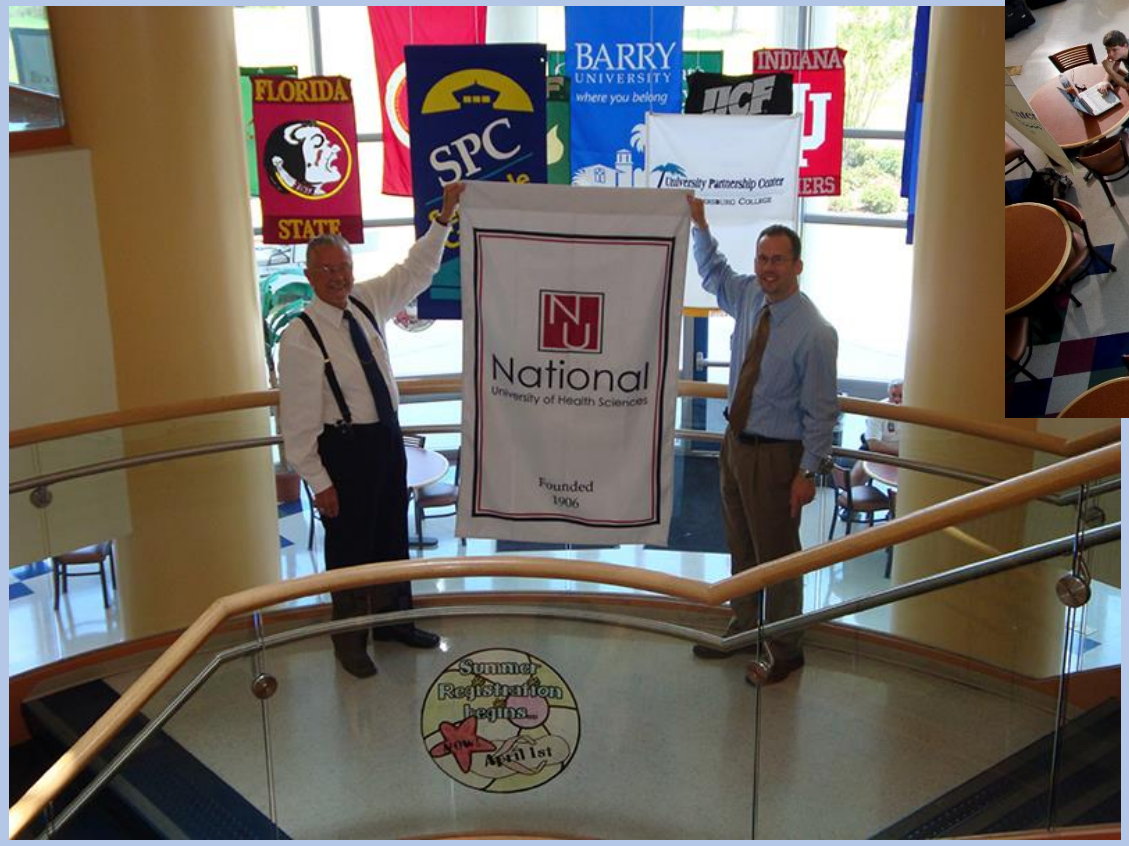
Topics

- 2021 USOPC International Travel:
- Road to Beijing2022 World Cup for Bobsled and Skeleton Sigulda,Latvia
- Junior Pan-American Games in Cali, Colombia
- Chiropractic in Sports
- Case Scenarios
- World Olympians Scholarship Program
- Selected Modalities: IASTM, Alter-G,BFR
- Heat Illness
- The Para Athlete
- USOPTC Volunteer Program

Where I teach and where I treat NUHS – Florida Campus

Ribbon cutting of the Pinellas Park Clinic (PPC)

NUHS – Florida Campus is a member of the University Partnership System at St. Petersburgh College



Dr. Stiefel and Dr. Winterstein hanging the NUHS banner in Seminole.

Many “Pathways "to becoming an Olympic Chiropractor

Elana Meyers Taylor and Kaillie Humphries celebrate during the women's monobob medal ceremony during the Olympic Winter Games Beijing 2022 on Feb. 14, 2022 in Yanqing, China.

St. Moritz World Cup Bobsleigh and Skeleton

A treatment area may be improvised outside in the snow!

The Sports Specialty in Chiropractic is broad. It spans performance enhancement to emergent conditions.

Chiropractic in Sports Today

Just a few examples where sports chiropractic has made an impact.

- Most major professional teams (NFL, MLB, NHL, NBA, PGA)
- USA Track & Field National Championships
- US Olympic Trials for Track & Field
- US National Figure Skating Championships
- Olympic Games (Winter and Summer)
- Pan American Games
- World Swimming Championships
- NYC Marathon
- Ironman Triathlons

Current and former NFL Chiropractors

- Thank You Spencer Baron DC DACBSP©

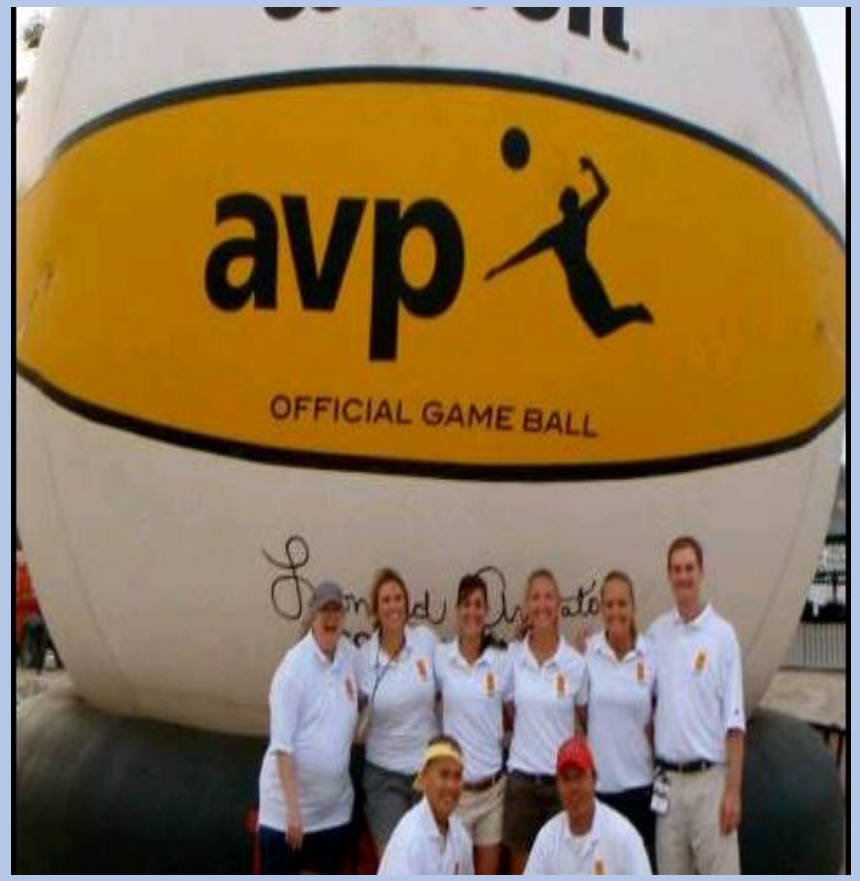
Eugene, Oregon

Track and Field Tokyo 2020 Olympic Trials

USA Track and Field Olympic Trials

The primary focus in sports medicine is always the optimal care of the athlete.

Collaboration among sports healthcare providers always results in the best of possible results.



Sports Chiropractic is offered in the Olympic Village Polyclinic.

Polyclinic

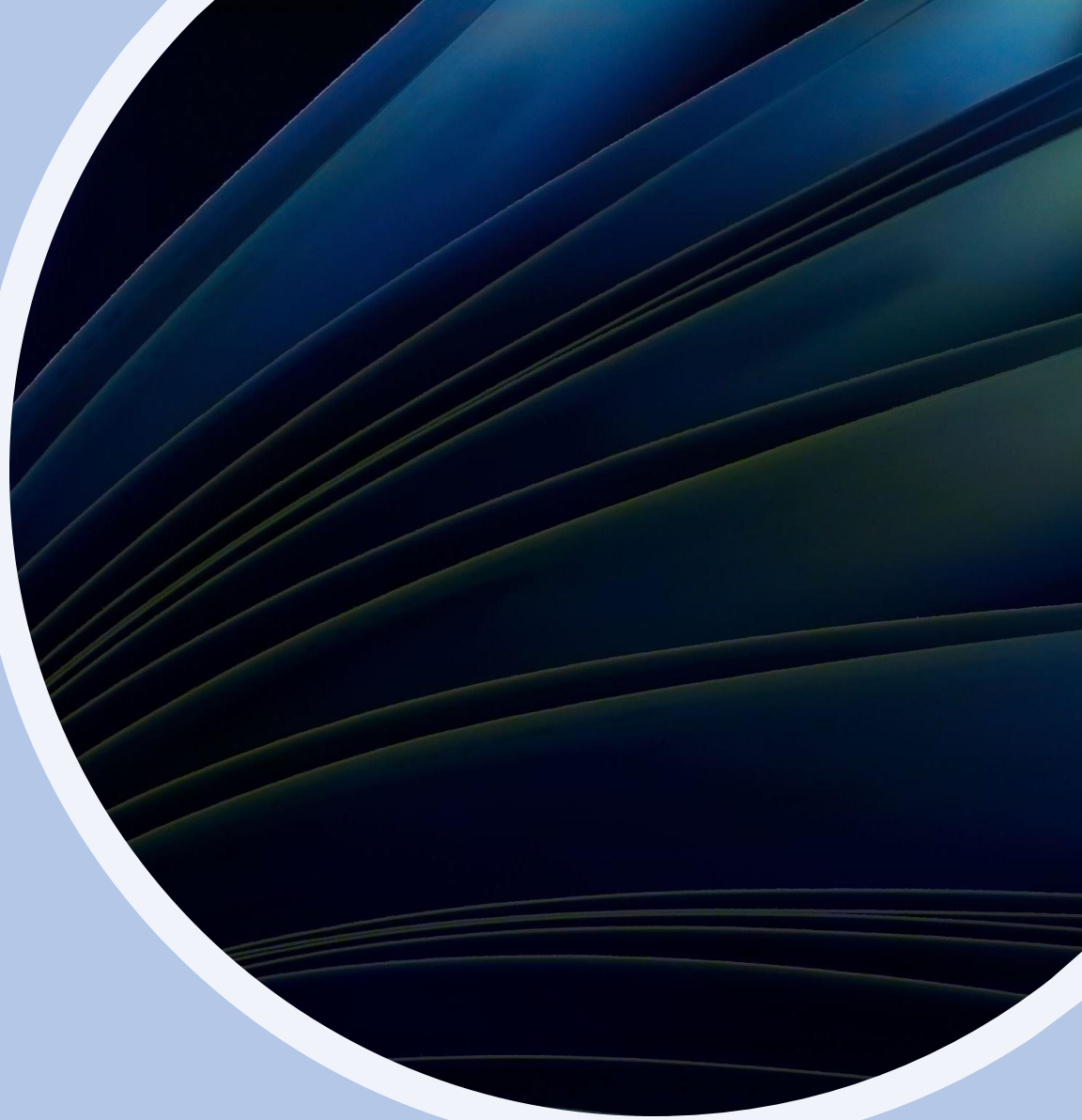
Sports Medicine Team

“YOU NEED TO KNOW

WHAT YOU NEED TO KNOW

BEFORE YOU NEED TO KNOW IT!”

William Moreau DC DACBSP



BOB Crash compilation

- https://www.youtube.com/watch?v=98LPuXzdzBc

Austin’s Skeleton Crash at 78 mph

Altenburg, Germany ; World Cup 2021

In Slo-Mo

CASE SUMMARIES AY2018/19

Baseball Exertional/medical (indirect) A male 21 year old collegiate baseball player collapsed on the field during baseball practice. He was transported to a nearby hospital but could not be revived. Cause of death is pending autopsy but is suspected to be cardiac related.

Basketball Exertional/medical (indirect) A male 21 year old collegiate senior basketball guard collapsed following a pick-up basketball game with friends. Efforts to revive him were unsuccessful. Cause of death was cardiomyopathy.

A male 24 year old collegiate basketball player collapsed following a pick-up basketball game. Bystanders transported him to a nearby hospital. He was not able to be revived. Cause of death is pending autopsy but is suspected to be cardiac related

CASE SUMMARIES AY2018/19 continued.

Cross Country Exertional/medical (indirect) A male collegiate cross country runner collapsed during practice. He was transported to a hospital and later diagnosed with heat stroke and rhabdomyolysis. A full recovery is expected.

Football Traumatic injury (direct) A male 20 year old collegiate football linebacker was injured during a football game. He came off the field complaining of a headache and was placed into concussion protocol. While heading toward the locker room for treatment, he collapsed. On site EMS personnel transported him to a hospital. He underwent emergency brain surgery. A full recovery is expected.

A male 19 year old collegiate sophomore football offensive lineman was injured during a football game. He was injured during a tackle and was immediately unable to move his legs. He is currently paralyzed from the waist down and is recovering in a long term facility. A long term prognosis is unknown

CASE SUMMARIES AY2018/19 continued.

A male collegiate football player was injured attempting to make a tackle during a football game. The athlete was attended to on-field and airlifted to a hospital. He underwent emergency surgery for a fractured C5 vertebra. He will graduate from college though he can no longer play football. Long term prognosis is unknown.

Football Exertional/medical (indirect) A male 18 year old collegiate freshman football defensive back collapsed during a preseason conditioning session. The coach called 911 and he was immediately attended to by athletic trainers. An EMS crew arrived and continued care, but all revival efforts were unsuccessful. Cause of death was acute aortic dissection.

A male 19 year old collegiate football defensive tackle was found medically distressed outside his dorm room following the team's first practice. He was tended to by an athletic trainer until EMS arrived. He was transported to a nearby hospital where he later died. Cause of death was exertional heat stroke

CASE SUMMARIES AY2018/19 continued.

http://nccsir.unc.edu/about/

Soccer Traumatic injury (direct) A female 21 year old collegiate senior soccer player sustained a skull fracture during a soccer game by colliding with another player while attempting to head the ball. The athlete made a full recovery.

Track and Field Traumatic injury (direct) A male collegiate track and field athlete was doing a warm-up exercise when he backed into a javelin sticking out of the ground. The athlete was transported to the hospital via EMS where he had surgery for a punctured and collapsed lung. He is expected to make a full recovery.

HIGH SCHOOL Baseball Traumatic injury (direct) A male high school baseball pitcher was struck by a line drive on the left side of his head. He was knocked unconscious and attended to by athletic trainers and coaches. He was transported to a hospital by ambulance. The athlete suffered a fractured temporal bone, brain bleed, and a concussion. Current prognosis is unknown.

Responsibilities of the Sports Chiropractor at event coverage

- Familiarize yourself with the staff of ED's, urgent care centers, in the vicinity of your sporting event.
- Have a well stocked travel medical kit including personal protective equipment.
- Latex/vinyl gloves; Eye protection
- Confirm there is an emergency plan in place for the venue/event
- Conduct/attend sports med staff meeting prior to event.
- Perform "walk thru" on grounds/venue and confirm scene safety, hazards ?,EMS access, Helicopter landing site?
- Have a biohazard kit for cleanup after contamination of clothing or supplies.
- Proper waste disposal

- Who is the game administrator for each team?
- Is there a qualified medical professional on site?
- Is there an emergency action plan in place for the venue?
- Is there an automated emergency defibrillator on site?
- Where are the emergency exits/entrances for the facility?

2021 Junior Pan-American Championships, BUGA ,COLOMBIA

USOPC Medical Staff

2021 Junior Pan-American Championships

Boxing Venue: Coliseo Luis Ignacio Alvarez Ospina

Determining nearest Hospital

Distance from venue to San Jose Hospital 7mins

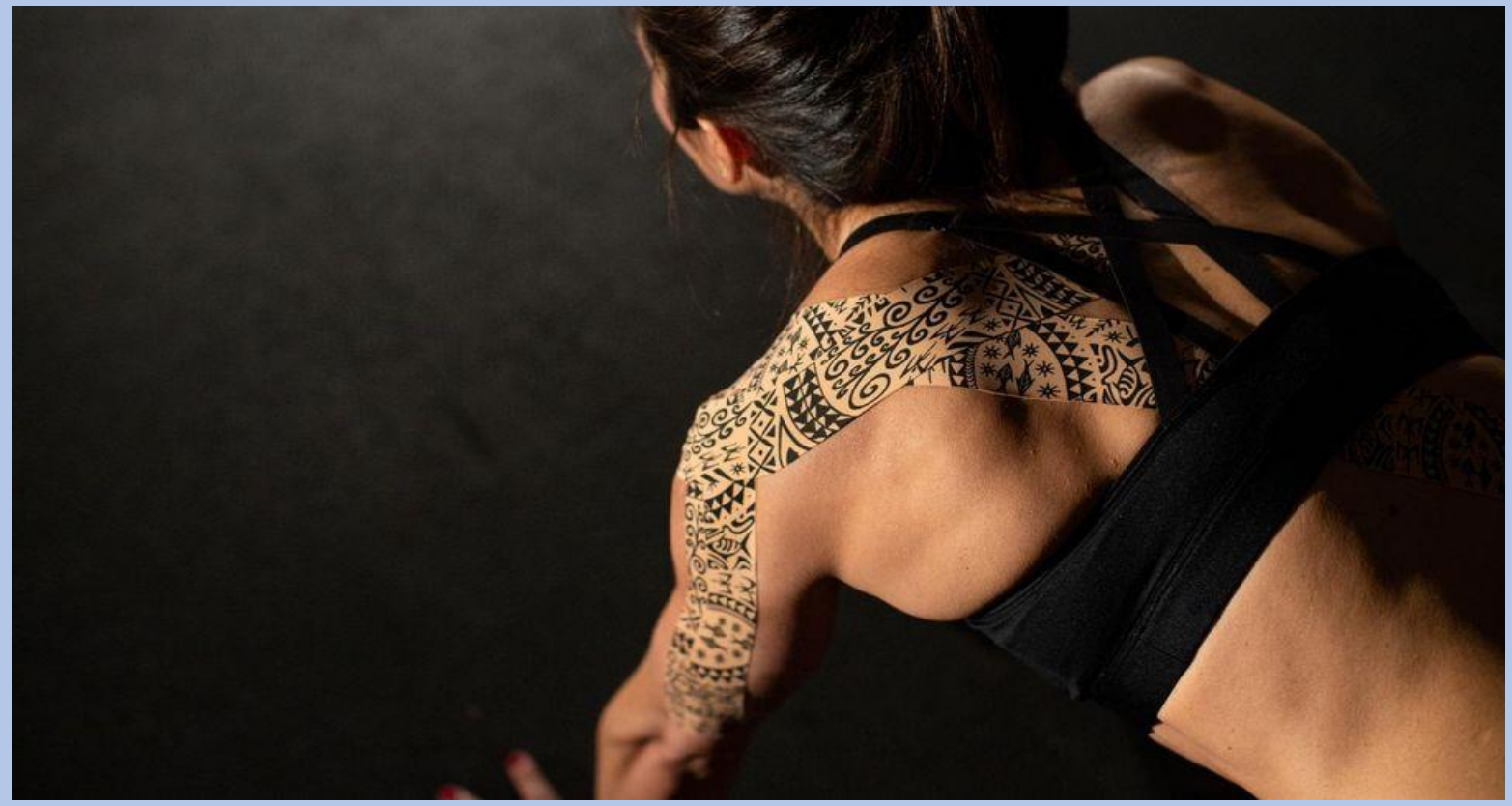
Ringside Medical

Ambulance Team

- As sports chiropractors, we wish to utilize cutting edge technologies that will facilitate our athlete's goals and give feedback in an objective manner .

Kinesiology Tape

DynamicTape.com (Biomechanical Tape)



Cupping

Dry Needling

Myofascial Release

Is a form of soft tissue manipulation that focuses on ‘releasing’ or softening the connective tissue of the body known as fascia.

Fascia

Is a generalized word for the sum of the connective tissues of the body. Connective tissues play an important **structural** role in the human body. This role is supported by collagen, elastin, reticulin fibers, and assorted interfibrillar proteins referred to as 'ground substance'.

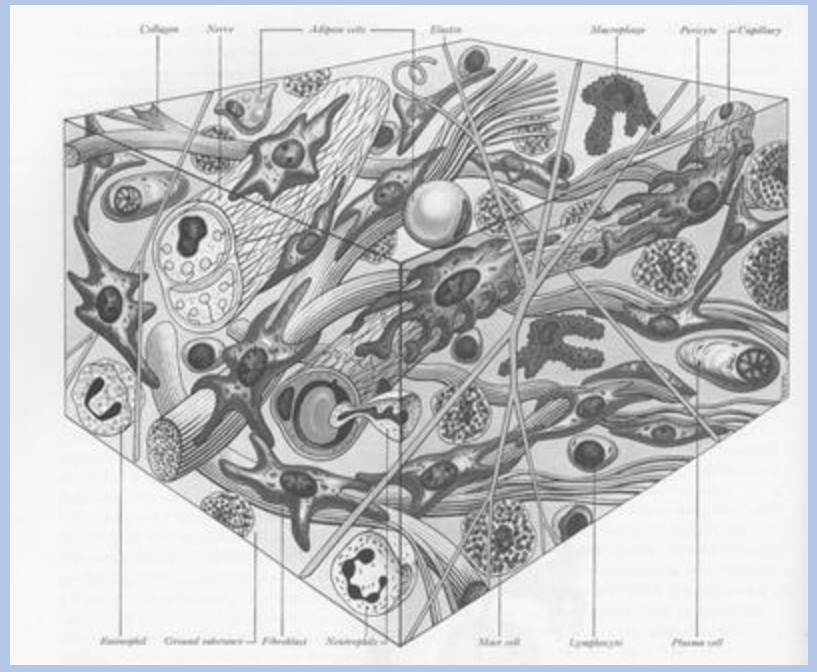
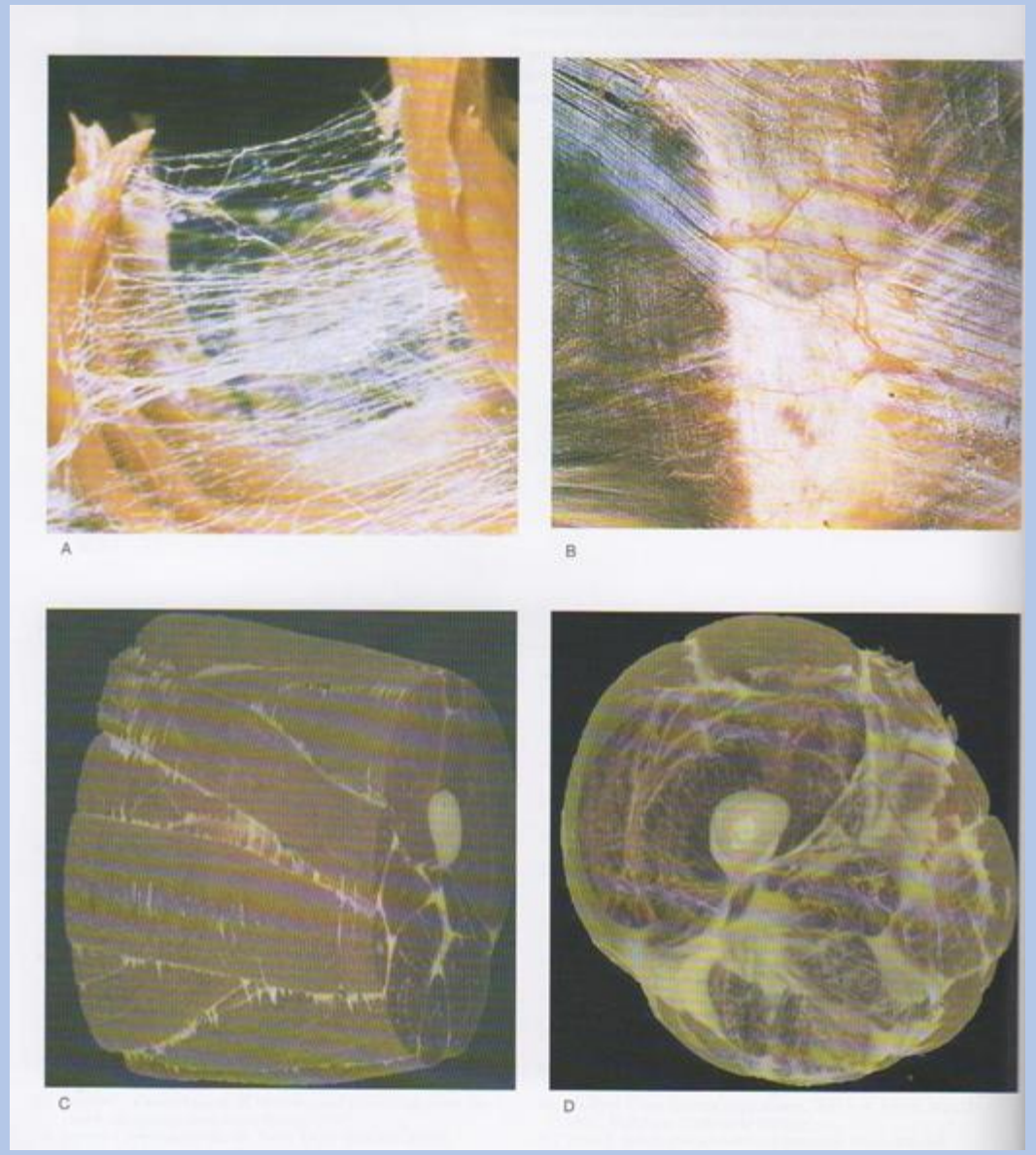


Image Taken from: (Myers 2001)

A. Teased muscle fibers showing surrounding fascia
B. Superficial pectoral fascia in sternal region
C. Cross section of thigh muscle showing marbled muscle and fascia
D. Cross section of same thigh with the muscle removed and only the fascia remaining

Image taken from: (Myers 2001)



Human Fascia

Putting Fascial *Theory* Under the Microscope

Fascia magnified 25x

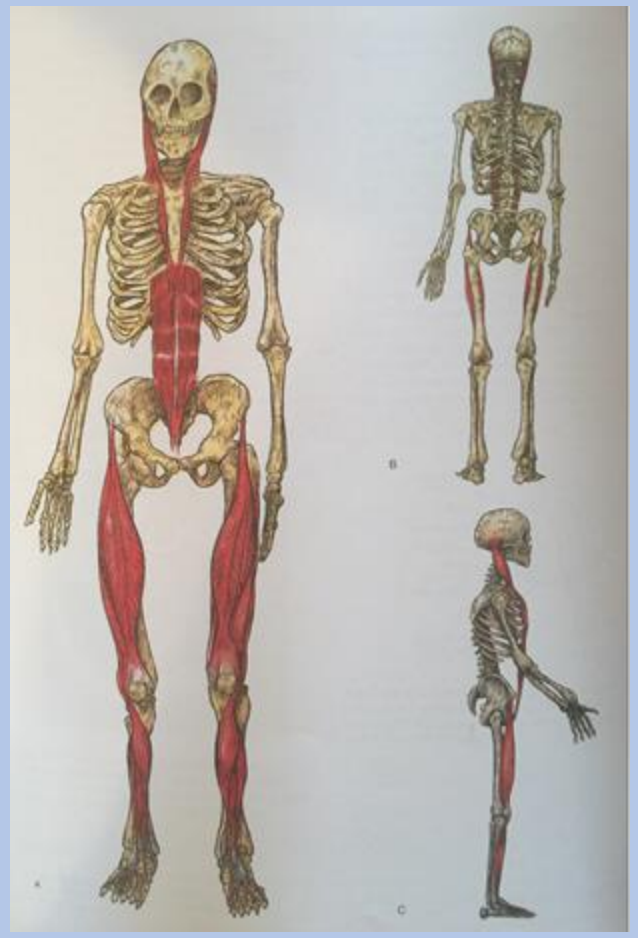
https://www.youtube.com/watch?v=JgNoUrNlgr4

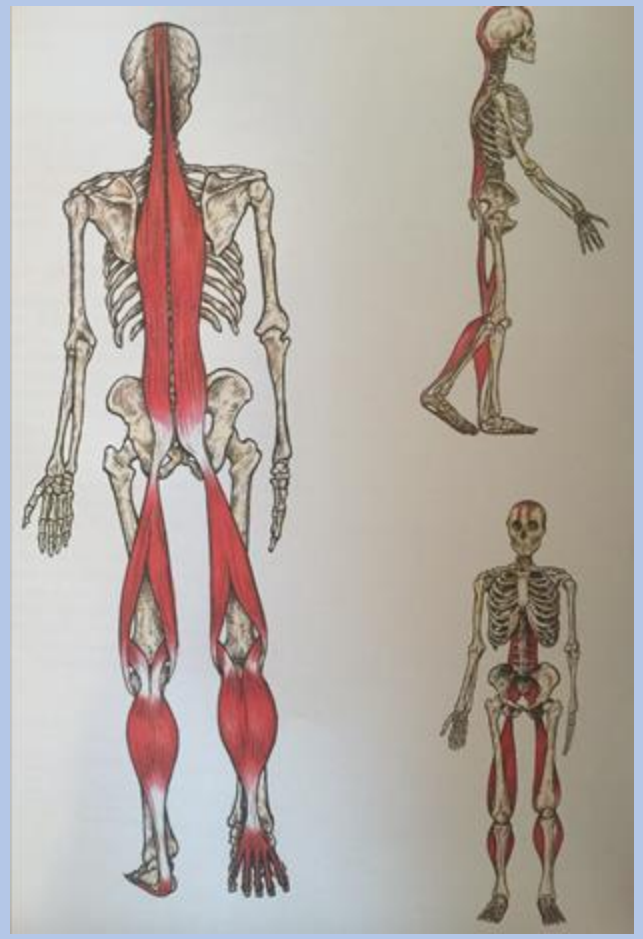
Strolling Under the Skin

https://www.youtube.com/watch?v=eW0lvOVKDxE

6:00, 11:00- 13:something

Superficial Front Line





Superficial Back Line

Lateral Line

Spiral Line

Technique

To Perform a fascial release you simply find the area of fascial tightness and apply very light pressure into the ‘barriers’ of tightness caused by the fascia.

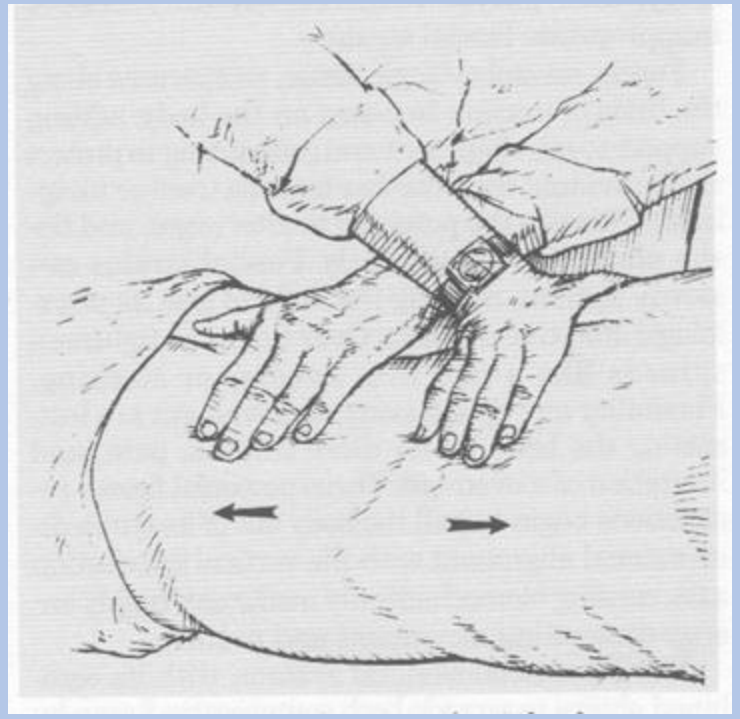


Image Taken From: (Barnes 1990)

The Patient's Body Will Guide You…

There is no protocol set in stone, rather you start at the area of tightness and let the patient's body tell you where to work next based on what they feel as well as what you feel.

FOLLOW THE RELEASE… GO JUST TO THE BARRIER AND WAIT…

Image Taken From: (Barnes 1990)

References:

- Barnes, JF. 1990. Myofascial release: the search for excellence. Paoli, PA.: Rehabilitation Services Inc.
- Myers, TW. 2001. Anatomy trains: myofascial meridians for manual and movement therapists. London.: Churchill Livingstone.
- Jeff Longfellow DC FR6307 Presentation

Instrument Assisted Soft Tissue Mobilization

IASTM

- Instrumented assisted soft tissue mobilization
- Involves using instruments to address musculoskeletal pathology-related impairments and help heal soft tissues
- Technique that uses instruments to remove scar tissues from injured soft tissues and facilitate healing process through formation of new extracellular matrix protein such as collagen
- Improve soft tissue function and range of motion following sports injury while also reducing pain
- Can help shorten the rehabilitation period and time to return to sports among athletes and ordinary people who have suffered sports injuries

Early History of IASTM

- During ancient Greece and Rome, a small metallic instrument known as the “strigil” was used in the bathhouses for therapeutic purposes
- In traditional Chinese therapy, the use of “gua sha” can be linked to the origin of IASTM
    - The term “gua sha” refers to the read spot that appears on the skin when an instrumental tool is used to push or scrape the skin, increasing the blood flow to facilitate the supply of blood and oxygen to the soft tissues

The Main Idea

- Instrument Assisted Soft Tissue Manipulation originated as a form of myofascial release.
- It is the use of instruments, made of metal, plastic, rubber or even Jade in order to manipulate soft tissue.
- Many of the higher end tools are made of surgical stainless steel which is non-porous and allows the practitioner to better feel the fascial adhesions.

Indications

- Lower back muscles strain or sprain
- Carpal tunnel syndrome
- Cervical sprain/strain
- Plantar fasciitis
- Rotator cuff tendinosis
- Shin splints
- Tennis/golfer’s elbow

Contraindications

- Cancer
- Unhealed, complicated fractures
- Certain types of kidney disorders
- Uncontrolled Hypertension
- Open wounds/unhealed suture sites/sutures
- Pregnancy

Contraindications

- Burns /scars
- Unhealed fractures
- Anticoagulant medications
- Rheumatoid arthritis/AS
- Contraindications RSD/CRPS
- Lymphedema
- Polyneuropathies
- Diabetes
- Osteomyelitis
- Varicose veins
- Thrombophlebitis

Graston ® GrastonTechnique.com

RockTape.com

Faktreducation.com
events@sports-seminars.com

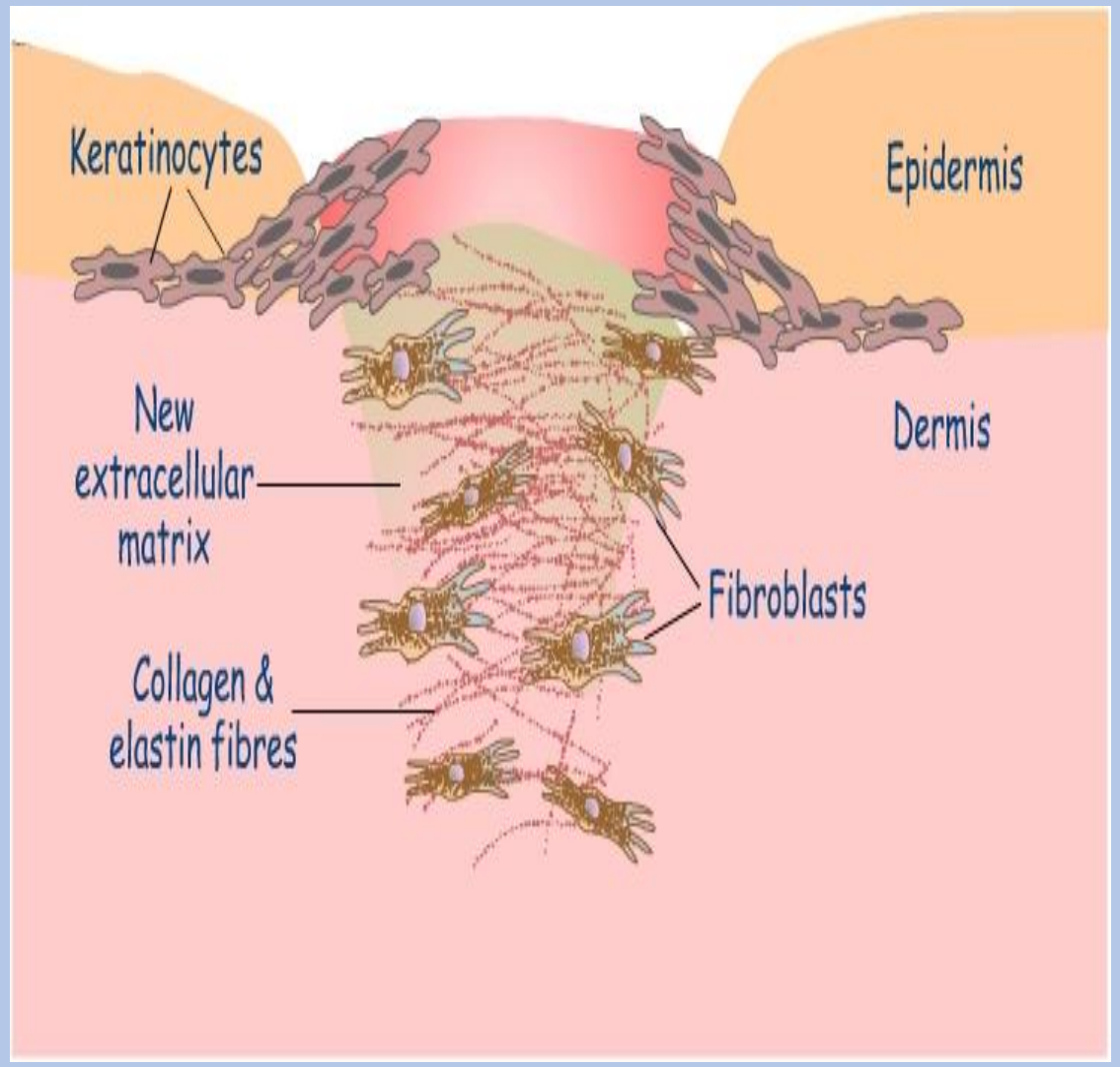
FAKTR® gdoerr@bergenchiropractic.com functionaltissue.com

Fascial Abrasion Technique TM

How it works

- Provide Mechanical Load to Tissue
- Break up adhesions or fascial lesions
- Resorption of excessive fibrotic tissue
- Fibroblastic recruitment
  - New Collagen Formation
- Mechanoreceptor stimulation
  - Neurosensory Gating

- OVERALL → SOFT TISSUE REMODELING



Petechiae

Why each application is used

- Neurosensory – reset the muscle tone by overloading the Central Nervous System with Afferent Stimulation causing reciprocal inhibition of Efferent stimulation – weight of the instrument
- Structural – induce a focal inflammatory response to rebuild tissue. Used on Tendons and muscles – patient tolerated pressure
- Anti-inflammatory – decrease inflammation – whispy light strokes less than neurosensory

Application-Concept Combinations

- Pro-inflammatory and eccentric loading
- Neurosensory and all concepts
- Anti-inflammatory and position of provocation

References

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- Lundon, K., 2007. The effect of mechanical load on soft connective tissues. In: Hammer, W.I. (Ed.), Functional Soft- tissue examination and Treatment by Manual Methods, third ed. Jones & Bartlett, Sudbury, MA, pp. 33–161.
- FAKTR class – Dr. Greg Doerr
- Chris Kotwicki DC FR6307 Presentation

The Alter -G

Alter-G Indications

- Injury recovery
  - Meniscal tears
  - Ankle sprains
  - Muscle strain
- Aerobic conditioning
- Weight reduction
- Neuromuscular re-education
- Strength training
- Rehab after joint replacement
- Balance and stability in peripheral vision loss

How does it work?

NASA Differential Air Pressure (DAP) technology

Antigravity treadmill seals patient in compression shorts with zipper. Lifts patient with blower and generates a pressure above 1 ATM on the sealed bag. This makes the patient buoyant

Pressure regulation system allows for constant recognition of patient's movements and weight control.

Contraindications

DVT

Severe CVD

Suspected fracture of lower extremity

Children under 13

Always make sure to have the right electrical connection to power equipment. Decrease risk of electrical shock.

Precautions

1

Always have supervision of patient. Weather it be staff member or CA especially for elderly patients.

2

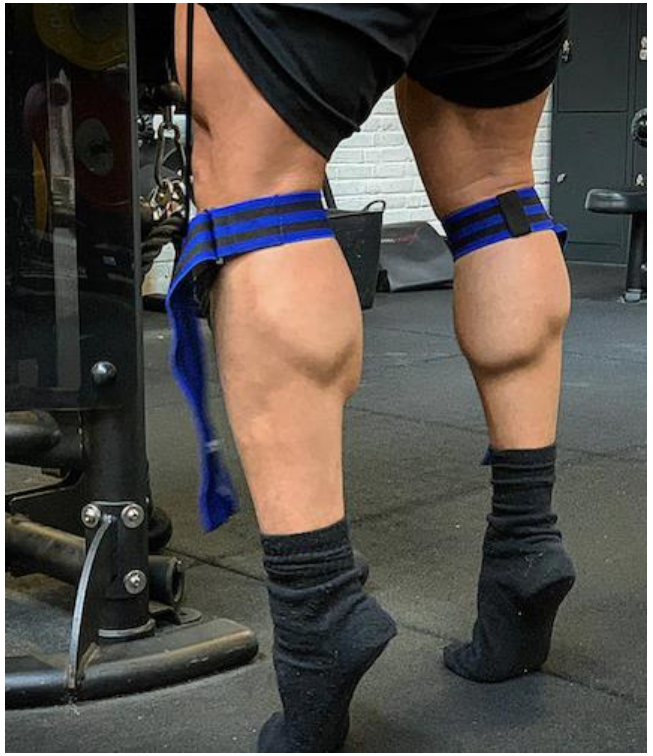
Make sure patient knows how to stop the treadmill when in use

3

Weight limit patient should be between 85lbs-400lbs

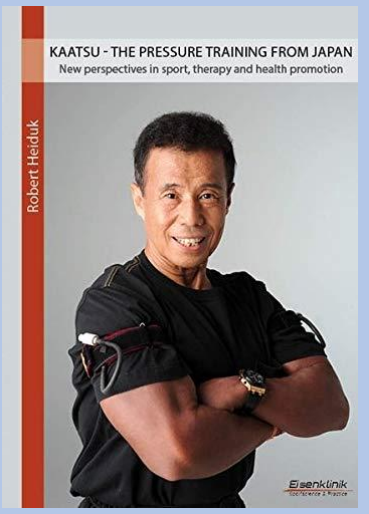
The Aquajogger, a low tech alternative to the pricey Alter-G

BFR

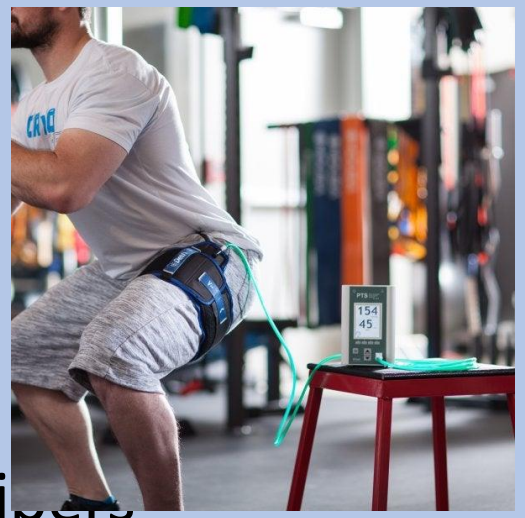


BFR

- Developed in 1960's in Japan
- Was known as KAATSU training
- Application of tourniquet or wrap over extremities while performing rehabilitation
- Maintains arterial flow while occluding venous outflow



Application



- 80% restriction on extremity (180 mmHg)
- Eliminates use of type I fibers and relies on type II fibers
- Large accumulation of lactic acid that creates metabolic stress on the muscle
- Signals release of GH
  - Aids in muscle repair

BFR

- Creates a hypoxic environment optimal for protein synthesis without muscle soreness
- Less breakdown, less soreness, decrease muscle wasting

	HIGH INTENSITY (HIT)	(BFR) +LOW INTENSITY	LOW INTENSITY
Training range	70 – 85% %1 RM	20 – 35% 1 RM	20 – 35% 1 RM
Strength	Recruitment of fiber II	Recruitment of fiber II	Recruitment of fiber I
Muscle Damage requiring recovery (Creatine Kinase)	Present	Not significant	Not significant
Lactate production (mmol)	Similar	Similar	Not present
Neuromuscular (Type II recruitment)	Type II activation near maximal effort	Type II activation at sub max effort	No additional recruitment
Growth Hormone	100 fold increase	1.7 X greater than HIT	No change from baseline
IGF-1	Increase	Significant Increase	No change from baseline
MTOR1C	Increase	Significant Increase	No change from baseline
Myostatin	Down regulation	Down regulation	No change from baseline
Time to adaptation	12 weeks	2 weeks	

How does it work?

- Placed under mechanical stress which increases anabolic hormone levels
- Increase hypertrophy
- Cellular swelling creating anabolism in muscle tissue
- Generates Hypoxia due to reduced O2 and creates lactate
- Activate Myogenic stem cells that are responsible for repair of damaged muscle fibers and growth.

Who benefits from BFR?

- Post ACL/PCL tear
- In season athletes
- Elderly
- Hip or knee replacements
- Osteoarthritis
- Recurrent ankle sprains

Exercise Protocol

- Used at low intensity(20-30% 1RM)
- Higher repetitions (15-30)
- Short rest intervals (30 Seconds for 4-5sets)
- Example: Squat max: 225
- 45-65lb. Squat
  - 4 sets
  - 15 reps
  - 30 second rest

Contraindications

- Venous thromboembolism
- Impaired circulation
- Open fracture
- Severe hypertension
- Vascular Grafting
- Open soft tissue surgeries

- **Sports Chiropractic and the PARA athletes**

Chula Vista, CA and COS OPTC's

GERMANY

- The Paralympic movement has given many disabled athletes new opportunities to compete. Loss of a limb is one of the common disabilities.

Para Classification must be sport specific

- In para-sport, athletes are grouped by the degree of activity limitation resulting from the impairment. Different sports require athletes to perform different activities, such as: sprinting, propelling a wheelchair, rowing and shooting.

- Individuals with limb amputations participate in a wide range of recreational activities
- They appear to benefit both physically and psychologically from participation in sports and/or regular physical activity.
- Therefore, sports should be included in rehabilitation programs
- Individuals with limb amputations should be encouraged to pursue a physically active life following hospital discharge.

- Bragaru, M., Dekker, R., Geertzen, J. H., & Dijkstra, P. U. (2011). Amputees and sports. *Sports medicine*, *41*(9), 721-740.

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- User Manual AlterG Anti-Gravity Treadmill® Via400, 400M and 400X

- https://journal.parker.edu/index.php/jcc/article/view/51
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5039777/
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5331993/
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3924602/
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5159628/

- The United States Olympic & Paralympic Committee Sports Medicine department provides volunteer opportunities for qualified sports medicine providers to support U.S. Olympic and Paralympic athletes in achieving sustained competitive excellence.

- This program offers volunteers the opportunity to support Team USA by working with USOPC team members in providing an integrative, collaborative, multidisciplinary care approach for Team USA athletes.

- Volunteers must meet the requirements outlined and once selected will have the opportunity to collaborate and work alongside the USOPC Sports Medicine Team.

- Who: All licensed athletic trainers, chiropractors, massage therapists, physical therapists, and physicians who have been credentialed for a minimum of three years

- What: Volunteer your skills and time to support the Olympic and Paralympic Movement by providing care to Team USA athletes.

- When: Two-week rotations are available throughout the year.

- Where: Colorado Springs, Colorado; Chula Vista, California; & Lake Placid, New York

United States Olympic and Paralympic Training Centers

- Provide service to 20,000 + participants each year
- OPTC's receive over 1400 program requests per year
- Olympic, Paralympic and National Teams
- Junior National Teams
- Coaches/Officials education
- Development Programs
- International athletes and Programs
- Multi Sport Organizations and affiliated Sport Organizations

Sports Performance Division

- Mission: In partnership with the NGB and their National Team athletes and coaches, apply focused, integrated, effective performance services to achieve sustained international competitive excellence.
- Medical Services
- Sport Psychology
- Biomechanics
- Physiology
- Performance Technology

Sports Performance Division

- Strength and Conditioning
- Coaching
- Nutrition

Multidisciplinary Sports Medicine Network must complete 2 week volunteer medical rotation.

- MD/DO
- DC (CCSP © DACBSP©)
- PT,SCS
- ATC
- MT (Sports Massage)
- Acupuncture

USOPC Sports Medicine Volunteer Program

- As a sports chiropractor, do you want to help athletes of TEAM USA?
- Experience a multidisciplinary integrated team approach to the management of sports injuries?
- Have the opportunity to continue to work with elite level athletes?
- Do you want to go to the Olympic Games? Pan-American Games? Paralympic Games?
- Must be able to function in an integrated work environment between all professions.
- Including Sport Psychology, Biomechanics, Physiology, Nutrition, Strength and Conditioning.

USOPC Sports Medicine Volunteer Program

- Goal is to match skill sets and personalities with NGB's in system
- Those HCP's that have rotated are used as assets for the athletes and NGB's.
- They become embedded with the NGB's.

USOPC Sports Medicine Volunteer Program

- Doctor of Chiropractic /Minimum Standards
- At least 3 years in practice
- Valid State License
- CCSP or DACBSP
- 1,000,000/3,000,000 Malpractice Insurance
- Must provide on-site care for sports team they cover and must have attended practice and competition.
- A letter of Recommendation from an Athletic Director, Head Coach, or NGB Administrator
- May not have any disciplinary license actions

DC Application Highlights

- Minimum standards stated
- Additional Experience as Team Physician, National Team, International Team
- References from Medical Director, Administrator, Coach
- Other Certifications i.e. EMT, ATC, CSCS, PES
- Memberships in Professional Organizations
- Teaching F/T at accredited institution
- Publications Scientific Peer Reviewed Journals

Additional Education as a Volunteer

- USADA
- SAFESPORT
- Use of Equipment and modalities that are relatively unique to the USOC
- Understanding the Sports Performance Structure
- International Sports Medicine Travel Protocols

- To start your Olympic Journey:

- https://www.teamusa.org/Team-USA-Athlete-Services/Medical/Sports-Medicine/Volunteer-Program#:~:text=Contact%20us%20at%3A%20sportsmedicinevolunteerprogram%40usopc.org

- My contact information:
- cguadagno@nuhs.edu
- Clinic: 727-873-7882
- Pinellas Park Whole Health Clinic
- 6630 78 Ave N
- Pinellas Park FL 33781
- USA

- **Jill Bakken & Vonetta Flowers Win First Olympic Gold**
- The IOC added women's bobsled to the Olympic program at the 2002 Olympic Winter Games. It was one of few remaining Olympic sports without a women's event, and heading to the 2002 Games, the Americans, led by pilot Jean Racine, were favored to win at least one medal.

But it was Jill Bakken and Vonetta Flowers who claimed the honor of winning women's bobsled first-ever Olympic gold medal.

- Not only had Bakken and Flowers made history as the first Olympic women's bobsledding champions, Flowers was the first Black athlete to win a gold medal at an Olympic Winter Games

- **First Summer and Winter Olympic Medalist**
- In July 2013, Lauryn Williams — a two-time Olympic medal-winning sprinter — had a chance meeting with Olympic hurdler Lolo Jones at the airport. Williams had read that Jones was a new bobsled brakewoman and wanted to know what the sport was like.

  “I didn’t really have a clear plan for what I wanted to do in life after sport,” said Williams by phone recently. “So I just jumped in, and six months later, I was at the Olympics.”

  At the 2014 Olympic Winter Games in Sochi, Williams won an Olympic silver medal as Meyers Taylor's brakewoman. Until a reporter asked her what it felt like to become the first U.S. woman to win medals at both the Summer and Winter Games, Williams had no idea that she had just made history.

The below provides links to various sports-related databases of journals for those in sports chiropractic to view and engage.

Top Chiropractic journals
Top Sport Science journals
Ranked Physical Therapy, Sports Therapy and Rehabilitation journals
Ranked Orthopedic and Sports Medicine Journals
Ranked Complementary and Manual Therapy journals
Ranked Rehabilitation journals

Peer-reviewed Chiropractic Journals
Journal of Chiropractic Medicine
Journal of Chiropractic Education
Journal of Manipulative & Physiological Therapeutics

Chiropractic & Osteopathy, Australasian Chiropractic & Osteopathy, and COMSIG Review
Chiropractic Journal of Australia (CJA)
Chiropractic History
The Journal of the Canadian Chiropractic Association (JCCA)
Journal of Chiropractic Humanities
The Journal of Clinical Chiropractic Pediatrics (JCCP)
Asia-Pacific Chiropractic Journal