

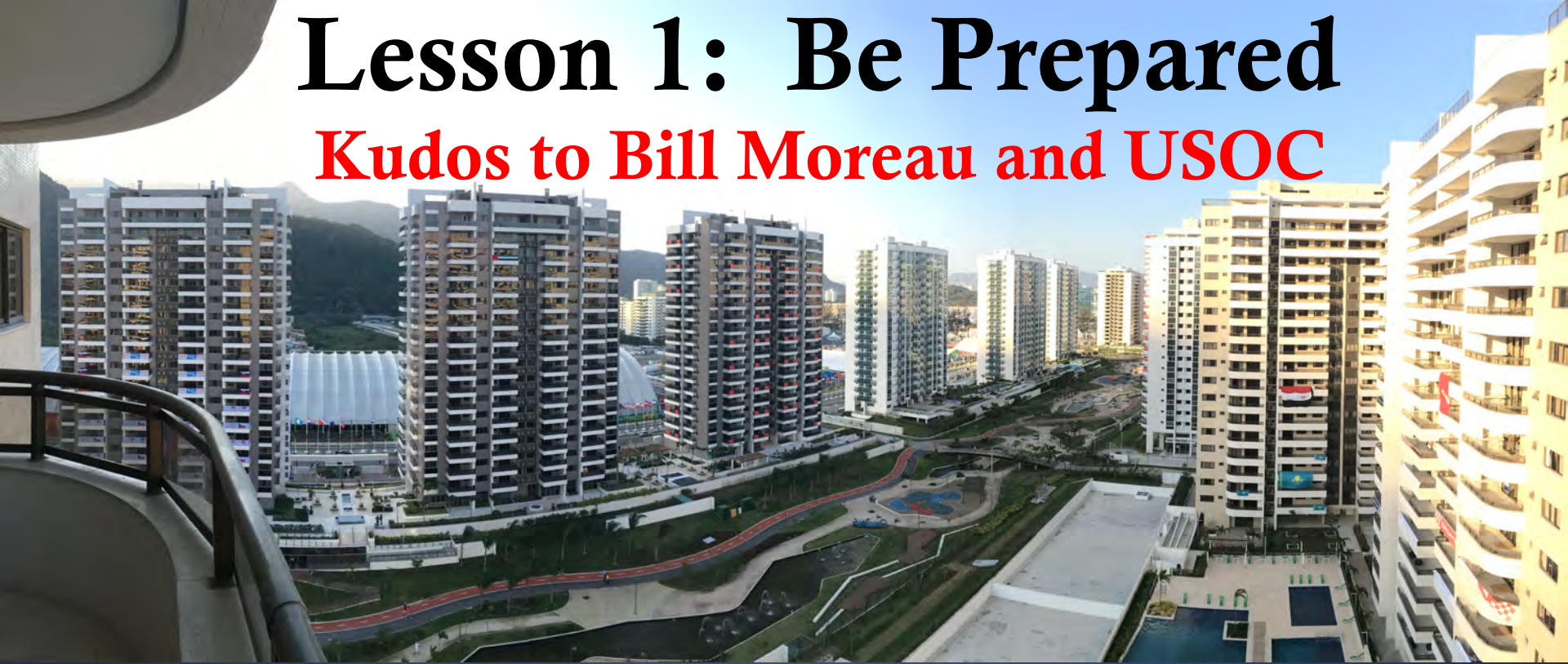
# Citius, Altius, Fortius: Lessons from Rio 2016





# Lesson 1: Be Prepared

## Kudos to Bill Moreau and USOC





# Everything!!!



75 miles... < 1 sec



Gold/Silver... 0.01 sec



**“We provide the edge”**

# Honing the edge: Pre-Games Preparation

- ❁ Team USA Cornerstone: **Field a healthy team**
- ❁ Early & Accurate dx of all health care issues
- ❁ Comprehensive elite athlete health profile
- ❁ Access to team-based, performance-focused, high quality, efficient health care
- ❁ Address unique challenges of each venue or country







**SPORTS  
MEDICINE**



Separate foot print for massage, Hot/Cold plunges,  
GameReady, Normatech  
Protected zone for athletes  
Team nutritionist monitored cafeteria and supplied snacks  
Sports psychology and Athlete ombudsman available 24-7





Rio was prepared too!



Overcame political & economic challenges



# Personally Prepared

- I-translate
- Gamebag portability/content
- Team building
  - USOC Olympic Training Center/ EMR
  - Pan American Games
  - 21 yrs USAG, “special invitation”
  - Rolex Equestrian Championships



Primary care : optimize your MSK skills  
Orthopods : optimize your “doctor” skills



## Lesson 2:

# Be open minded

About tasks, roles, needs & approaches



🎬 Remember...its always **FIRST** about the athletes and their performance for **Team USA!**



# Be open minded Escort/ Witness



## Doping Control Step-by-Step Guide

- ### 1 Athlete selection

Attention: you can be selected for doping control anytime and anywhere in the world, between the opening and the closing of the athletes' village. Update your whereabouts or make sure your Chef de Mission has your name on the rooming list.
- ### 2 Notification

Keep your accreditation with you so your identity can be checked. If you are selected, the chaperone will notify you and explain your rights and responsibilities. You will sign the athlete notification field on the form.
- ### 3 Reporting to the Doping Control Station

The chaperone will stay close to you at all times. You will need to go to the Doping Control Station (DCS) as soon as possible. In some cases, such as media commitments, seeking medical attention or attending a victory ceremony, you may delay your arrival at the DCS.
- ### 4 At the Doping Control Station

At the DCS you will stay in the waiting room, under supervision of the chaperone, until you are ready to provide your sample. If you have any questions, you may ask the Doping Control Officer (DCO).
- ### 5 Selecting a sample collection vessel

You will choose a sample collection vessel. Make sure the bag is sealed and the vessel doesn't have any cracks.
- ### 6 Providing the urine sample

It is time! You will be accompanied to the toilet by a DCO of the same gender, who will give you instructions in order to clearly see you passing the sample. You will need at least 90ml of urine.
- ### 7 Selecting a kit

You will select a kit that will protect your sample on the way to the lab. Always check if the number on the box and the one on bottles A and B are the same. That is the number that will be written on the Doping Control Form (DCF).
- ### 8 Dividing and sealing your sample

Once you choose your kit, the DCO will instruct you on pouring the urine into bottles A and B. You will tighten the lids and confirm that the bottles are sealed.
- ### 9 Measuring specific gravity

The DCO will measure the specific gravity of your urine sample to make sure it meets lab requirements. If your sample does not meet laboratory requirements, an additional sample may be collected.
- ### 10 Blood sample

You may be asked to provide a blood sample. You will choose a blood kit and then the blood collection officer will collect the sample. The DCO will also provide instructions.
- ### 11 Completing the Doping Control Form

After every sample collection session, the DCO will complete the Doping Control Form (DCF). You will be asked to declare any medications or supplements taken in the last seven days. Confirm all your data and the number of the kit.
- ### 12 Finishing up

Sign where indicated and get the athlete's copy before you go. Your sample will be sent to a WADA (World Anti-Doping Agency)-accredited laboratory by secure courier.



Lesson 3:

# There is no I in TEAM



Primary Care

Chiropractic

Athletic Training

Massage tx

Orthopaedics

Physical Therapy

Administration

# “My neck hurts”







# Team USA

## Medical Summary

- 550 athletes
- 30 Sports
- Total contingent = 1200
- Total health care staff including NGB's > 100
- USOC Umbrella Team: 1 Internist, 3 Ortho, 4 chiros, PTs, ATCs
- > 5000 treatments
- > \$500,000 value





# Lesson 4:

Elevated viral counts

Floating garbage

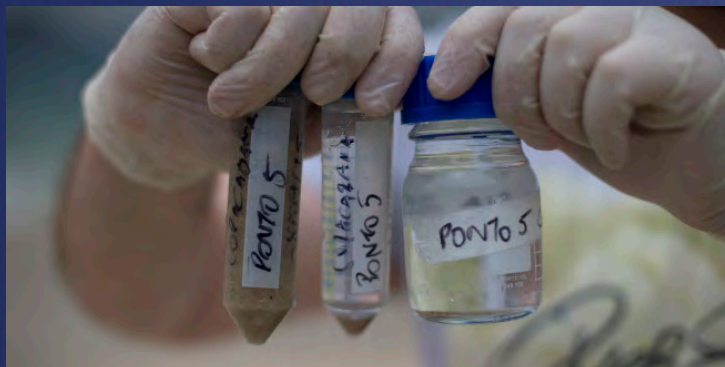
Elevated bacteria counts

Rashes

# The Infectious Disease Games



## Who makes decision?





# “Got lucky but no permanent solution”

Ricardo Santos, Brazilian Sailboarder

- ❉ No floating garbage, water appeared clean
- ❉ Team USA had no illnesses or rashes related to contaminated water
- ❉ Increased psychological stress led to one athlete who gulped water to ask for treatment despite no symptoms



Sydney 2000 had similar pre-game complaints & intra-game outcome.  
Legacy.... increased awareness & improved quality!

# Be Ready: The Infectious Disease Games



## FilmArray™ Gastrointestinal Panel



1 Test. 22 Targets. All in about an hour.



### Bacteria

- Campylobacter* (*jejuni*, *coli* and *upsaliensis*)
- Clostridium difficile* (toxin A/B)
- Plesiomonas shigelloides*
- Salmonella*
- Yersinia enterocolitica*
- Vibrio* (*parahaemolyticus*, *vulnificus* and *cholerae*)
- Vibrio cholerae*



### Parasites

- Cryptosporidium*
- Cyclospora cayetanensis*
- Entamoeba histolytica*
- Giardia lamblia*



### Viruses

- Adenovirus F 40/41
- Astrovirus
- Norovirus GI/GII
- Rotavirus A
- Sapovirus (I, II, IV and V)

- ### Diarrheagenic *E. coli*/Shigella
- Enteroaggregative *E. coli* (EAEC)
  - Enteropathogenic *E. coli* (EPEC)
  - Enterotoxigenic *E. coli* (ETEC) *lt/st*
  - Shiga-like toxin-producing *E. coli* (STEC) *stx1/stx2*
  - E. coli* O157
  - Shigella/Enteroinvasive *E. coli* (EIEC)



**Simple:**

Only 2 minutes of hands-on time

**Easy:**

No precise pipetting required

**Fast:**

Run time of about 1 hour

↔ Equivocal	Marburg virus
Not Detected	Orthopox genus virus
Not Detected	Ricin communis
Not Detected	Rickettsia species
Not Detected	Rickettsia prowazekii
Not Detected	Staphylococcal enterotoxin gene
Not Detected	Variola virus
Not Detected	VEE virus
Not Detected	WEE virus
✓ Detected	Yersinia pestis

Run Details	
Pouch:	Biothreat Panel v2.2
Run Status:	Completed
Serial No.:	00052751
Lot No.:	100920B





B I O



F I R E<sup>®</sup>



## 🏀 Representative cases: Goal...a Healthy Team!

- 🏀 GI (+) Ecoli: Tx: Zifaxin: (+) response 24 hrs
- 🏀 GI (+) Multi strain Ecoli: Tx: Zifaxin (+) response 24 hrs
- 🏀 GI (+) Norovirus: Tx: isolation, symptom tx, no new cases

### Benefits of Biofire:

Earlier use of Tamiflu, Zifaxin

Reduced use of Z-pacs

Better team monitoring for contagions

Targeted, evidenced-based treatment plans

# What would you do?

Case 1

Doc with a cough

Case 3

Case 2

Case 4

Case 5





# Athlete Education for Zika: The Infectious Disease Games

## The spread of the Zika virus

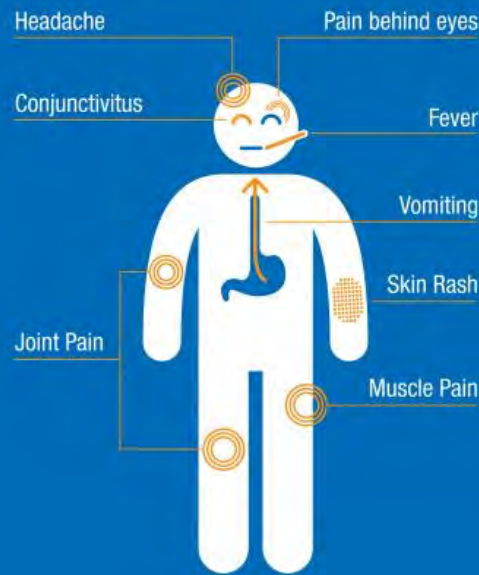
Countries and territories with active Zika virus transmission and reported cases



# Staff education for Zika

## The Infectious Disease Games

### Symptoms of Zika virus



It is a possibility that there is a link between maternal Zika virus infection and infant microcephaly.

Only 1 in 4 people with Zika infection develop symptoms

Symptoms of Zika virus can last for up to a week



**1 week**

### Clinical features: Zika virus compared with dengue and chikungunya

Features	Zika	Dengue	Chikungunya
Fever	++	+++	+++
Rash	+++	+	++
Conjunctivitis	++	-	-
Arthralgia	++	+	+++
Myalgia	+	++	+
Headache	+	++	++
Hemorrhage	-	++	-
Shock	-	+	-

Reproduced from: Centers for Disease Control and Prevention. Zika virus - What clinicians need to know? Clinician Outreach and Communication Activity (COCA) Call, January 26, 2016. Available at: [http://emergency.cdc.gov/coca/ppt/2016/01\\_26\\_16\\_zika.pdf](http://emergency.cdc.gov/coca/ppt/2016/01_26_16_zika.pdf) (Accessed February 1, 2016).

UpToDate®



# Most common complaint in Rio

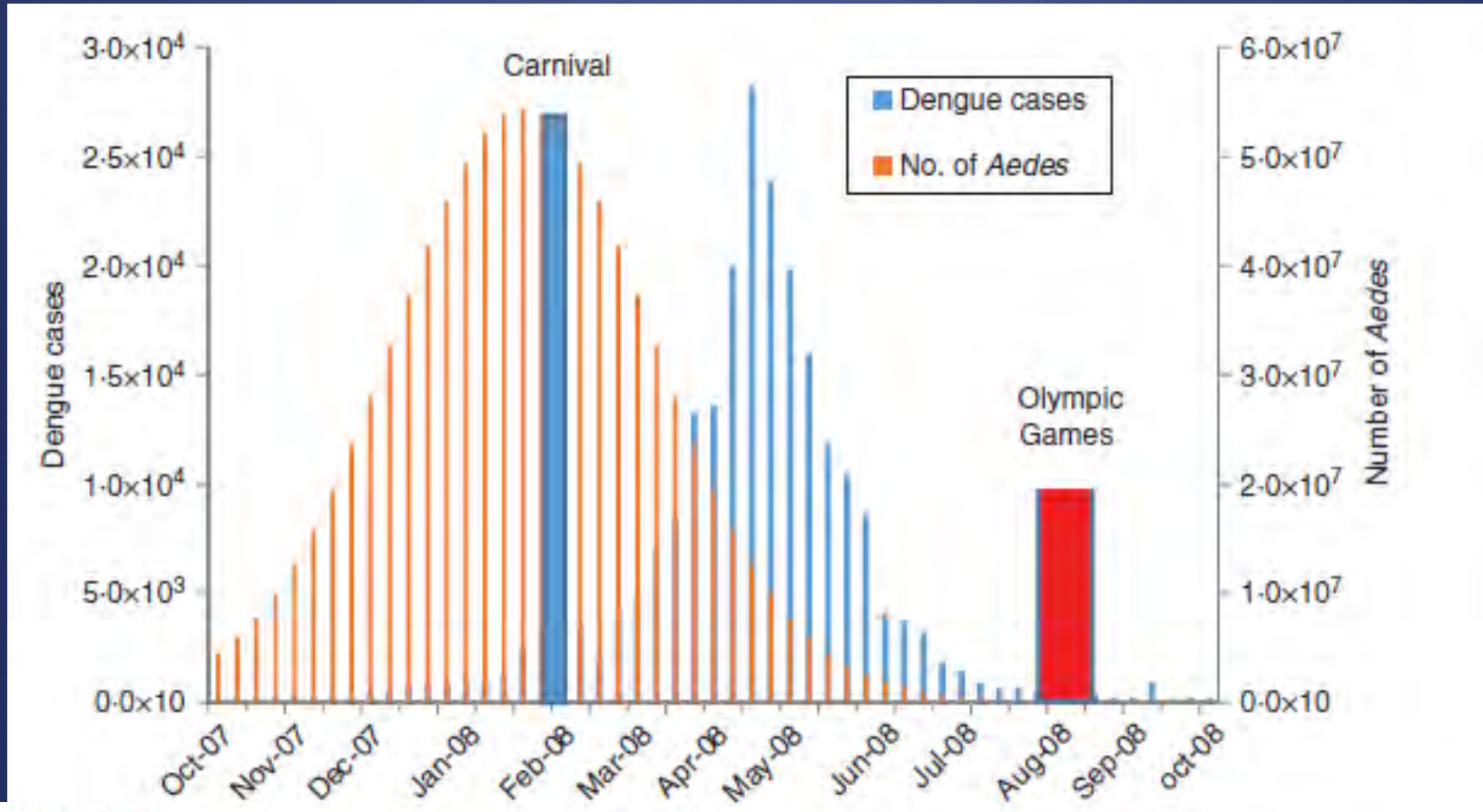
- ⊙ Sinus congestion, post-nasal drip, mild sore throat, cough
- ⊙ Likely environmental, could be viral (winter season)
- ⊙ **All athletes screened for rash, fevers, conjunctivitis**
- ⊙ “I want a Z-pac!”
- ⊙ Sx tx with decongestant, cold tx, cough drops/suppressant, Afrin **unless febrile...then Biofire!**



# No cases of Zika at Games

World Health Organization

Aedes Aegypti population



Burattani MN et al Epidemiol. Infect 2016



Data from University of Utah pending



## Lesson 5:

**Know the rules of the sport your covering!**  
**What are unique rules for Judo?**



Sarah Menezes

# What was highest risk sport in Rio?

- ⦿ Open water swimming
- ⦿ Equestrian
- ⦿ Gymnastics
- ⦿ Cycling
- ⦿ Boxing

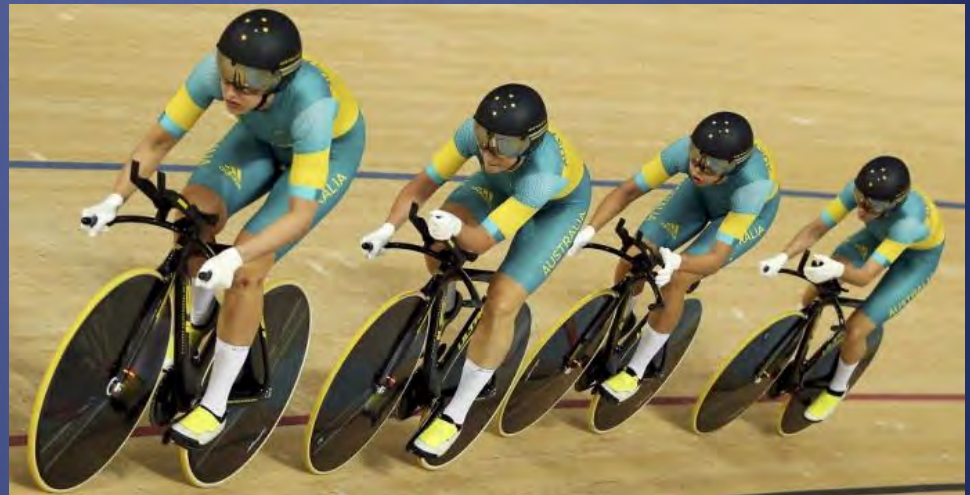


# Cycling

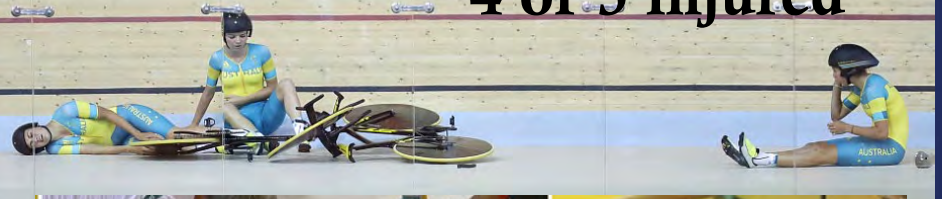


Richie Port

Scapula fx, contusions, abrasions



4 of 5 injured



Team Australia: Pursuit



# Cycling



**Vincenzo Nibali, Italy**  
**Double collar bone fracture**



**Sergio Henao, Columbia**  
**Pelvic fracture, chest trauma**



# Cycling

Annemiek Van Vleuten, Netherlands  
Leading race, wet road  
Critical condition, concussion, 2 vertebrae



Double check emergency plan if volunteering for host country!

# Lesson 6:

## Be complete/Don't overtreat MSK





# Shoulder Instability/Spasm/Pain

- ⊗ Equestrian dressage athlete
- ⊗ Calls prior to Games requesting injection at Games
- ⊗ Gets injection at home but not satisfied
- ⊗ (+) anterior pain, spasm (+) apprehension, decreased ROM and guarding, (+) instability hx
- ⊗ Options?





# To Cup or not to Cup



2016 Getty Images





# To Cup or not to Cup



2016 Getty Image

Naddour

# GETTING Cupped



## How does dry cupping work?



A glass cup is warmed by burning an alcohol-soaked cotton ball inside of it.

This removes the oxygen in the cup, which creates a vacuum.



The cup is turned upside down and placed on the patient's back.

The vacuum created by the lack of oxygen anchors the cup in place and draws the skin into the cup.



As the skin is drawn up into the cup, blood vessels on the skin's surface expand.

The cups are left for 5-10 min.

### Where to do it

Fleshy sites on the body, such as the back and stomach (and, to a lesser extent, the arms and legs), are the preferred sites for treatment.



### Effects

Drawing up the skin in the cup is believed to open up the skin's pores, which helps to stimulate:

- The flow of blood
- Balances and realigns the flow of qi
- Breaks up obstructions
- Creates an avenue for toxins to be drawn out of the body

### In China, cupping is used primarily to treat conditions such as:

- Bronchitis
- Asthma and congestion
- Arthritis
- Gastrointestinal disorders
- Certain types of pain

Cupping has also been used to treat:

- Infertility
- Athlete's foot
- Allergies
- Cancer
- Headaches
- Alzheimer's
- Kidney problems
- Liver problems

### Other types

**AIR CUPPING:** Instead of using fire to draw the oxygen out of the cup, a cup with a suction pump is used

**WET CUPPING:** The skin is punctured before the cup is placed on it. When the suction from the cup draws the skin up, a small amount of blood is drawn up. This is believed to remove toxins from the body.

### The cups

Most acupuncturists use cups made of thick glass or plastic. Glass cups allow the acupuncturist to see the skin and evaluate the effects of treatment.







# To Cup or not to Cup



# Be prepared for the worst Gymnast lands from vault

*Lesson 7*





**Be prepared for the worst**  
**Weightlifter injures elbow**  
**Andranik Karapetyan**



# Be Prepared for the worst Even when competition is over





# *Lesson 8: Past medical history is important, even at the Olympic Games*

## **Patella dislocation in shower**

- ❉ Shooting athlete with history of patellar instability
- ❉ Turns quickly when exiting the shower sustains patella dislocation
- ❉ Treatment & RTP? Does sport make a difference?
- ❉ Gentle reduction, Kinesiotaping, NSAIDS, and RTP as tolerated



# Rhythmic Gymnast with Stress Fx



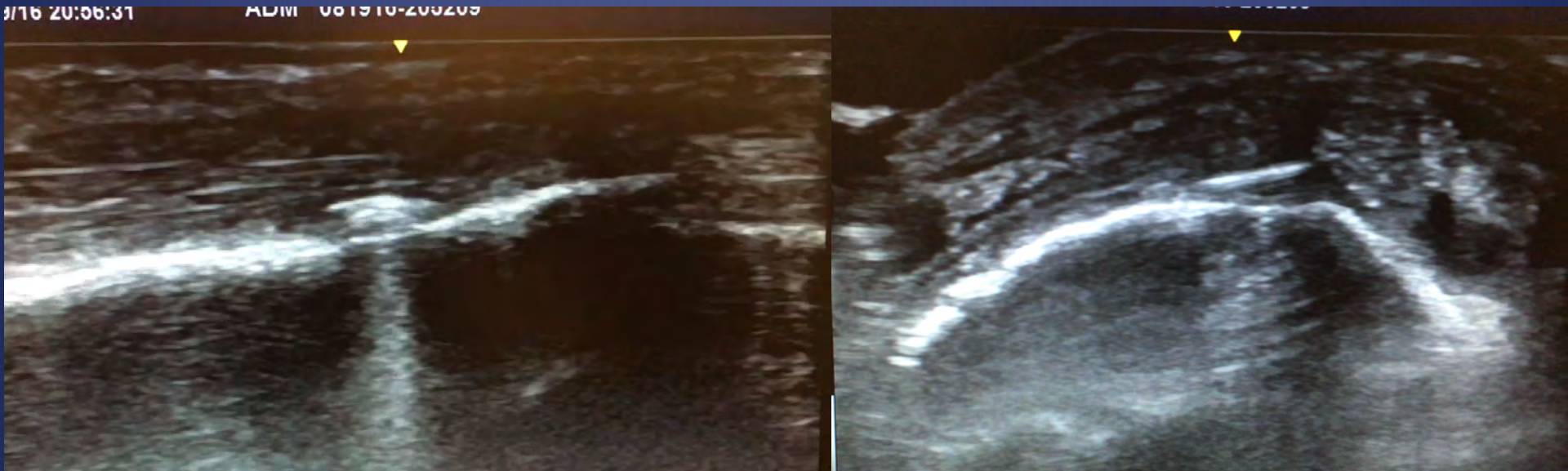
1996 -----2016



# Heptathlete with leg pain before games



# Heptathlete with leg pain at games



The value of diagnostic ultrasound



Lesson 9:

# Who's responsible for decision making?



- ⦿ Kayak athlete inverts himself, breaks oar, and hits head on underwater rock.
- ⦿ Positive headache and mild dysfunction to balance testing
- ⦿ No nystagmus on slow ocular movements but on quick oblique movements
- ⦿ **Who DQ's an Olympian?**
- ⦿ **RTP?**



# Who's responsible for decision making?

- ⊗ Gymnast from another country crashes during performance. Obviously shaken with probable loss of consciousness, possible neck injury?
- ⊗ Who makes DQ/RTP during Olympic competition?





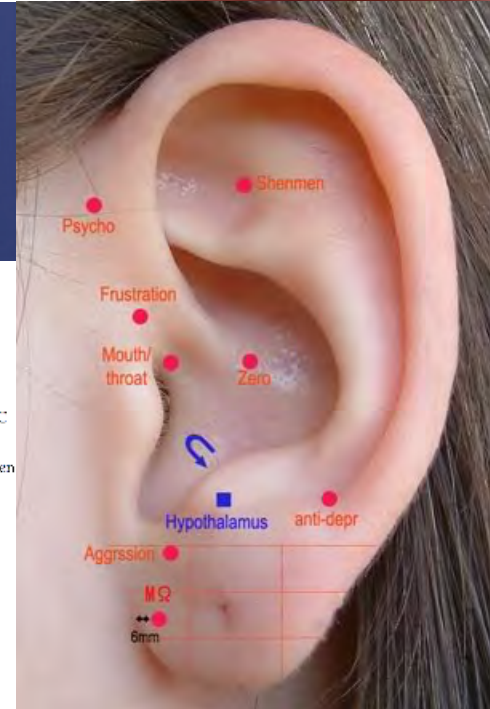
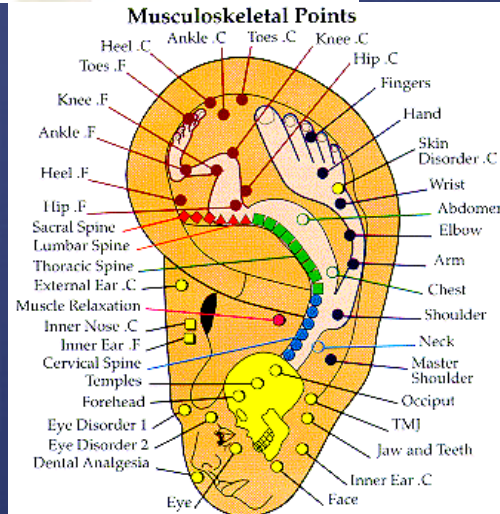
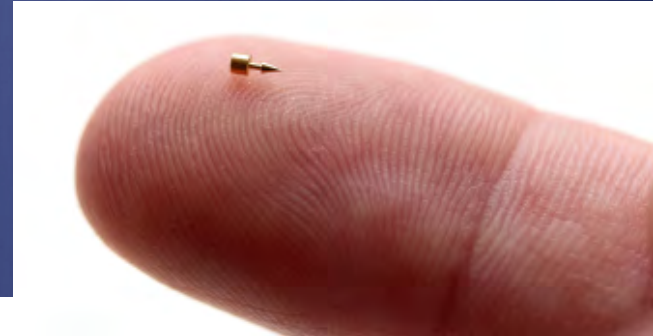
# Decision making?



# Lesson 2.1 (revisited)

# Be open minded

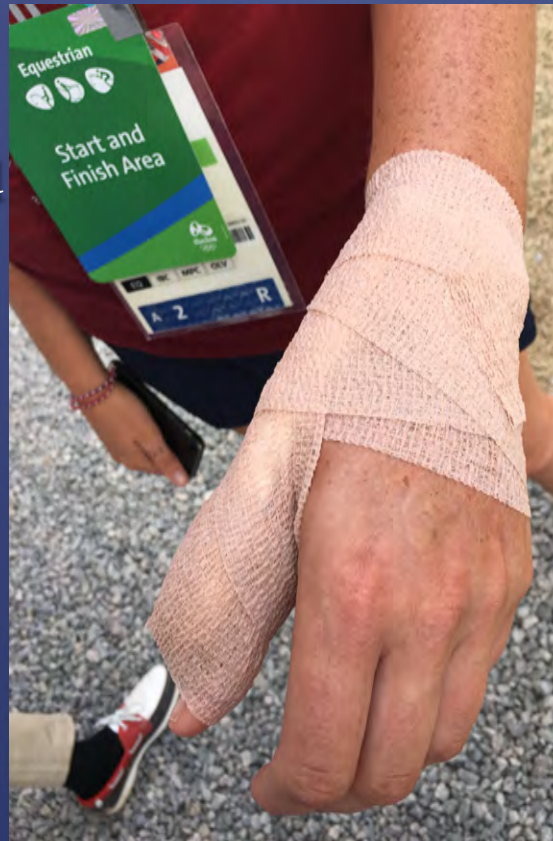
- ⦿ Athlete presents with recent onset headache. No central or peripheral neuro findings or prodrome complaints.
- ⦿ Intermittent history of headache. Occasionally with light sensitivity.
- ⦿ Continued complaints despite Tylenol.
- ⦿ Exam negative for sinus or visual findings.
- ⦿ 2/3 immediate resolution with Auricular asps!





# Be open minded/flexible

- ⊗ Equestrian
- ⊗ Horse rolled on hand
- ⊗ 1<sup>st</sup> C-MC jt pain
- ⊗ RTP?
- ⊗ X-rays?
- ⊗ No splint available





# Lesson 10

# Be present:

# Look for Olympic Moments

Phelps with Ryan Held





# Be Present: Look for Olympic Moments

Simone Byles, Aly Raisman, Madison Kocian, Laurie Hernandez, Gabi Douglas

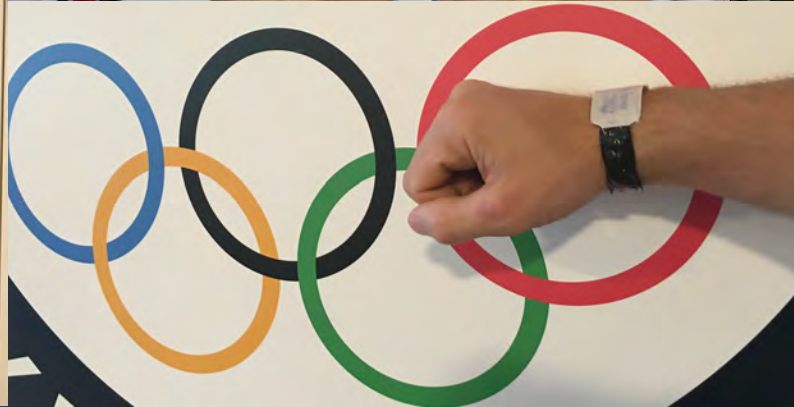




# Be Present: Look for Olympic Moments



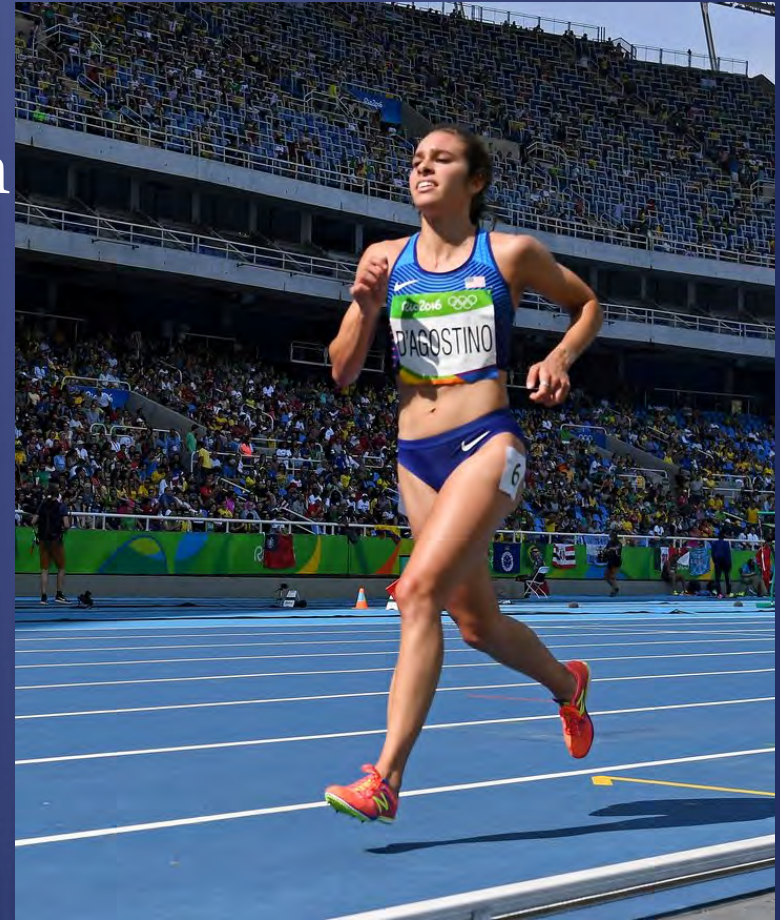




*Henrik Rummel*

# Female Distance Runner

- Overuse injury prior to games
- Improving but not resolved with training on Alter G
- Options?





# Nikki Hamblin, New Zealand Abbie DeAgostino, USA



# Pierre de Coubertin Medal





# Thank you

