Practice-oriented Sports Medicine

Duties of the team doctor, rules of on-site care

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Definition of sports medicine

- Sports and exercise medicine (SEM) can be defined as a broad ranging discipline incorporating the:

1. Management of the medical problems of exercising individuals at all ages and all levels of participation.
2. The pathophysiology, biomechanics and optimisation of human performance.
3. The use of exercise as a therapeutic modality in the treatment and prevention of disease.
4. The promotion of health and the prevention of disease or injury at a population level.

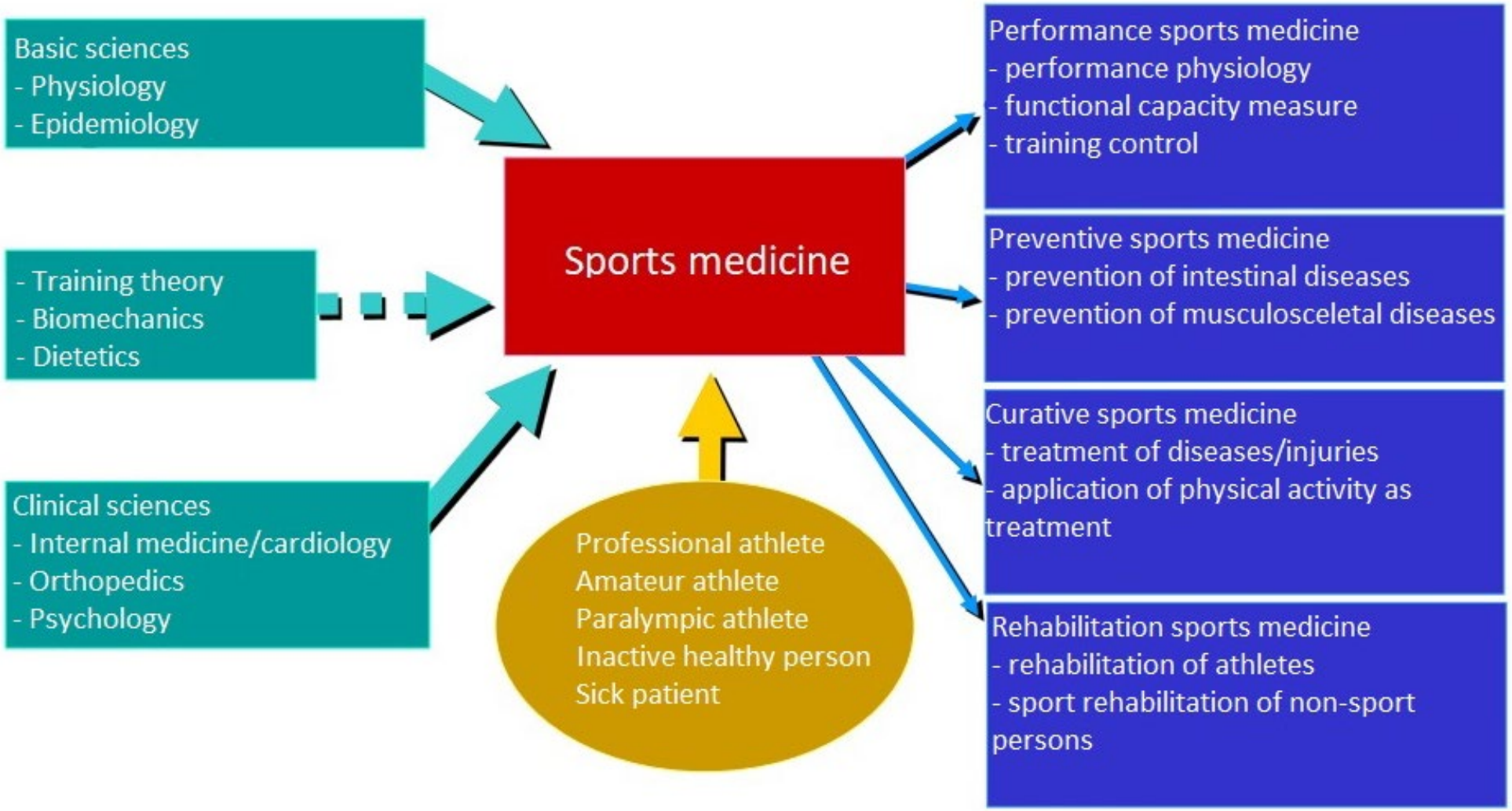
“traditional” view of SEM

McCrory P. What is sports and exercise medicine? Br J Sports Med. 2006 Dec;40(12):955-7. PMID: 17124107; PMCID: PMC2577455.

The origin of sports medicine

- Sports medicine is as old as sport
- Originates from the ancient Greeks
- Hippocrates was concerned with the effects of walking, running, horse riding and wrestling

Multidisciplinary nature of sports medicine



Duties of the team doctor

- Assesment of medical fitness before sport activity
- Supervision of sport events
- Emergency care of life-threatening injuries
- Checking the condition of the court (sports field safety) and protective equipment
- Managing the effects of environmental factors
- Care of the team when travelling (international training camp, competition)

Assesment of medical fitness before sport activity

- The aims of examination before sport activity
  - Screening for diseases that may limit sporting activity
  - Screening for diseases that affect health
  - Detect residual symptoms of cured diseases that may lead to injuries
  - Obtaining information on the athelete's suitability to play the chosen sport

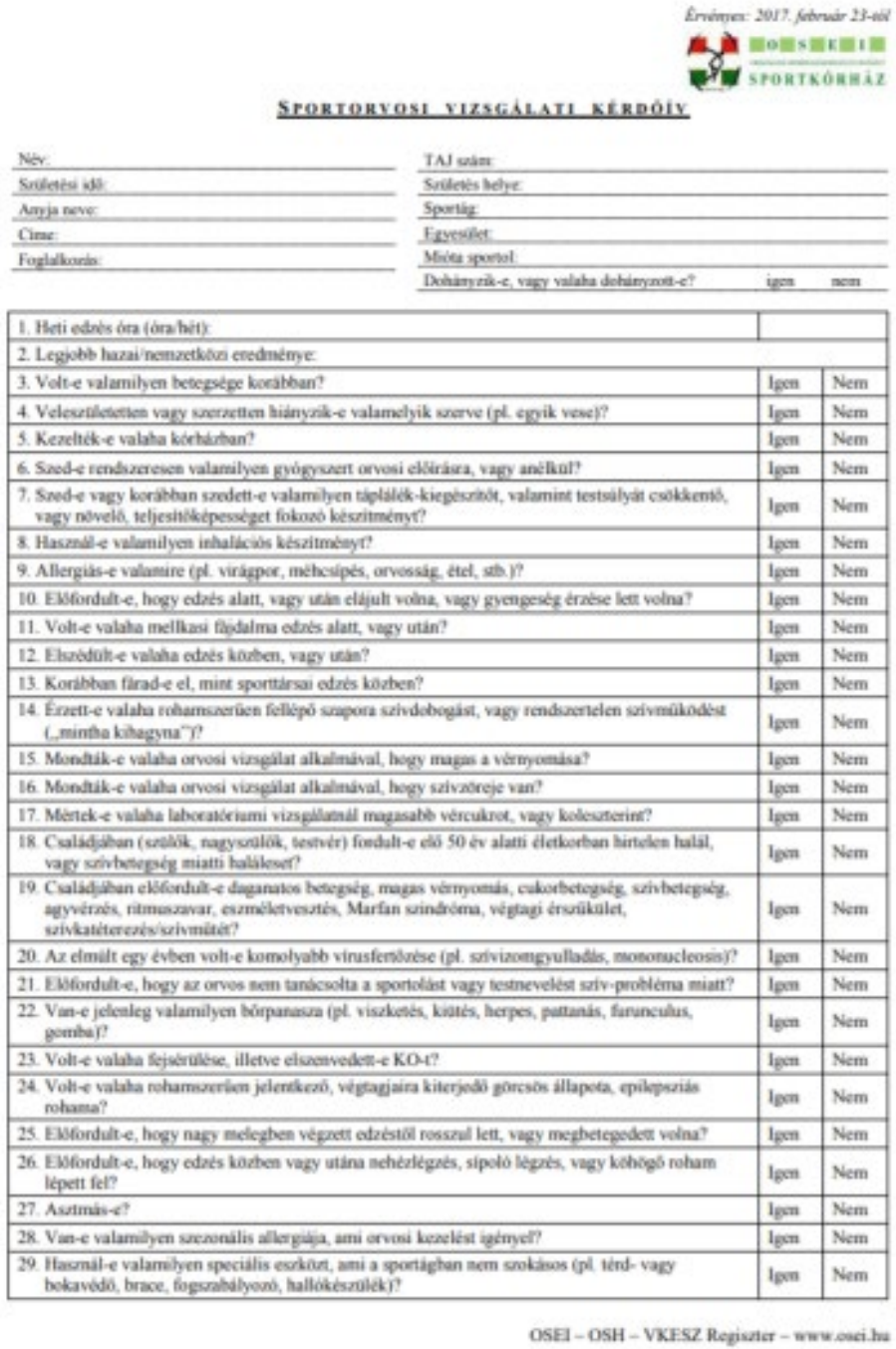
Assesment of medical fitness before sport activity

- Take past medical history
- Physical examination
- Examination of circulation and breathing (ECG, respiratory function test)
- Examination of musculosceletal system
- Laboratory test (blood count and urine examination)
- Monitoring of the athletes
  - Training
  - Illnesses
  - Injuries
  - Nutrition
  - Checking blood count
  - Symptoms of overtraining
  - Physiological indicators

Cooperation with national sport health network

Megyei rendelők

Prof. Dr. Kollár Lajos



Érvényes: 2017. február 23-tól

OSEI SPORTKÓRHÁZ

SPORTORVOSI VIZSGÁLATI KÉRDŐÍV

Név: TAJ szám:
Születési idő: Születés helye:
Anyja neve: Sportág:
Címe: Egyesület:
Foglalkozás: Mióta sportol:
Dohányzik-e, vagy valaha dohányzott-e? igen nem

1. Heti edzés óra (óra/hét):		
2. Legjobb hazai/nemzetközi eredménye:		
3. Volt-e valamilyen betegsége korábban?	Igen	Nem
4. Veleszületettten vagy szerzetten hiányzik-e valamelyik szerve (pl. egyik vese)?	Igen	Nem
5. Kezelték-e valaha kórházban?	Igen	Nem
6. Szed-e rendszeresen valamilyen gyógyszert orvosi előírásra, vagy anélkül?	Igen	Nem
7. Szed-e vagy korábban szedett-e valamilyen táplálék-kiegészítőt, valamint testsúlyát csökkentő, vagy növelő, teljesítőképességet fokozó készítményt?	Igen	Nem
8. Használ-e valamilyen inhalációs készítményt?	Igen	Nem
9. Allergiás-e valamire (pl. virágpor, méhcsípés, orvosság, étel, stb.)?	Igen	Nem
10. Előfordult-e, hogy edzés alatt, vagy után elájult volna, vagy gyengeség érzése lett volna?	Igen	Nem
11. Volt-e valaha mellkasi fájdalma edzés alatt, vagy után?	Igen	Nem
12. Elszédült-e valaha edzés közben, vagy után?	Igen	Nem
13. Korábban fárad-e el, mint sporttársai edzés közben?	Igen	Nem
14. Érzett-e valaha rohamszerűen fellépő szapora szívdobogást, vagy rendszertelen szívműködést („mintha kihagyna")?	Igen	Nem
15. Mondták-e valaha orvosi vizsgálat alkalmával, hogy magas a vérnyomása?	Igen	Nem
16. Mondták-e valaha orvosi vizsgálat alkalmával, hogy szívzöreje van?	Igen	Nem
17. Mértek-e valaha laboratóriumi vizsgálatnál magasabb vércukrot, vagy koleszterint?	Igen	Nem
18. Családjában (szülők, nagyszülők, testvér) fordult-e elő 50 év alatti életkorban hirtelen halál, vagy szívbetegség miatti haláleset?	Igen	Nem
19. Családjában előfordult-e daganatos betegség, magas vérnyomás, cukorbetegség, szívbetegség, agyvérzés, ritmuszavar, eszméletvesztés, Marfan szindróma, végtagi érszűkület, szívkatéterezés/szívműtét?	Igen	Nem
20. Az elmúlt egy évben volt-e komolyabb vírusfertőzése (pl. szívizomgyulladás, mononucleosis)?	Igen	Nem
21. Előfordult-e, hogy az orvos nem tanácsolta a sportolást vagy testnevelést szív-probléma miatt?	Igen	Nem
22. Van-e jelenleg valamilyen bőrpanasza (pl. viszketés, kiütés, herpes, pattanás, furunculus, gomba)?	Igen	Nem
23. Volt-e valaha fejsérülése, illetve elszenvedett-e KO-t?	Igen	Nem
24. Volt-e valaha rohamszerűen jelentkező, végtagjaira kiterjedő görcsös állapota, epilepsziás rohama?	Igen	Nem
25. Előfordult-e, hogy nagy melegben végzett edzéstől rosszul lett, vagy megbetegedett volna?	Igen	Nem
26. Előfordult-e, hogy edzés közben vagy utána nehézlégzés, sípoló légzés, vagy köhögő roham lépett fel?	Igen	Nem
27. Asztmás-e?	Igen	Nem
28. Van-e valamilyen szezonális allergiája, ami orvosi kezelést igényel?	Igen	Nem
29. Használ-e valamilyen speciális eszközt, ami a sportágban nem szokásos (pl. térd- vagy bokavédő, brace, fogszabályozó, hallókészülék)?	Igen	Nem

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Screening quastionnaire

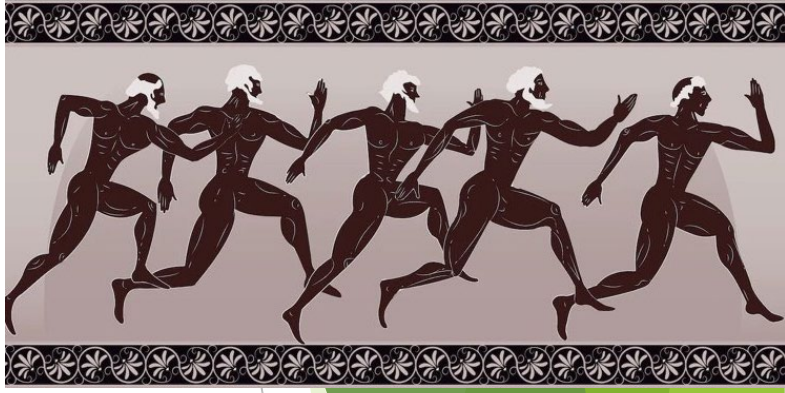
Supervision of sport events

- The team doctor often has to organise the medical care for a sporting event
  - Offered content of a medical bag

Medical instruments	Skin protection	Wound care
Phonendoscope	Disinfactant spray	Sterile dressing
Blood pressure gauge	Oxycort spray	Sterile bandages
Reflex hammer	Unguents	Elastic bandages
Pupillary lamp	Straps	Steri-strip
Thermometer	Elastic bandage	Syringes
Scissors	Cooling spray	Shoulder slings
Tongue spatula	Hydrogen peroxid solution	Spongostan
	Anti-inflammatory patch	Needles

Medications
Inj. Calcium
Sodium-chloride 10%
Corticosteroid inj.
Antihistamines
Painkillers
Anti-inflammatory drugs
Anesthetics
Spasmolytics
Anti-hypertensives
Sedatives
Nitromint spray
Salbutamol spray
Epinephrine

Supervision of sport events



- Medical care of endurance sport events
  - Doctor has to care about extreme weather conditions, dehydration, electrolyte imbalance, thermoregulatoty disorder, hyperthermia
  - Professional athletes: dehydration, hyperthermia
  - Amateur athletes: cardiac problems, hypoglicaemia, dehydration, hyperthermia
- Medical care of technical- and combat sport events
  - Increased risk of injury
  - Boxing, wrestling (CNS injury, fractures, luxations)
  - Cycling, skiing, motorsports (high energy traumas)

Checking the condition of the court (sports field safety) and protective equipment

- Condition of the court
  - Suitability for competition
  - Could be the cause of injuries?
  - Courts with high friction coefficient (too much wax on handball court) are not suitable for pivoting moves, which can cause ankle, knee injuries
  - Low friction coefficient could be the cause of slipping
- Shoes and sport equipments
  - Optimal elasticity
  - Provide optimal inferior support to toe
  - Provide the rollover
  - Optimal friction coefficient is needed

Checking the condition of the court (sports field safety) and protective equipment

- Protective equipment
  - First protective equipment was the mouthguard in combat sports
  - Helmets
  - Ski boots
  - Eye protectors

Managing the effects of environmental factors

- High altitude
  - Oxygen concentration decreases → hyperventillation →respiratory acidosis → increased bicarbonate elimination in the kidney
  - Adaptation processes between 1500-2400 m altitude
    - Respiratory tidal volume increases
    - Circulatory blood volume increases
    - Haemoconcentration
    - Haemoglobine level increases
    - 2,3 DPG concentration increases →better Hgb dissociation
  - High altitude sickness
    - Headache
    - Nausea
    - Vomit
    - Tachycardia
    - tachypnoe

Managing the effects of environmental factors

- Treatment of high altitude sickness
  - Acclimatization: below 3000 m for 3-6 weeks
  - Adequat hydration
  - Minimalize alcohol consumption
  - Avoid from sedatives

Managing the effects of environmental factors

- Hyperthermia
  - Endurance sports, increased enviromental temperature
  - Symptoms
    - Headache
    - Strange behaviour, convulsions
    - Loss of consciousness
    - Tachycardia
    - Dry, red skin with or without sweating
    - Core temperature above 40 C

Managing the effects of environmental factors

- Treatment of hyperthermia
  - Fluid replacement
  - Ice massage
  - Continous stretching of the muscles
  - Interrupt the competition →immediate rest
  - removal of insulating clothing
  - Increase airflow sorrounding the patient

Managing the effects of environmental factors

- Hypothermia
  - Core temperature decreases under 35 C
  - Stages of hypothermia (mild, moderate, severe)
- Treatment of hypothermia
  - Insulating clothing
  - Place warm bottles next to the patient's body
  - Warm saline infusion
  - 40 C temperature shower or bath

Care of the team when travelling

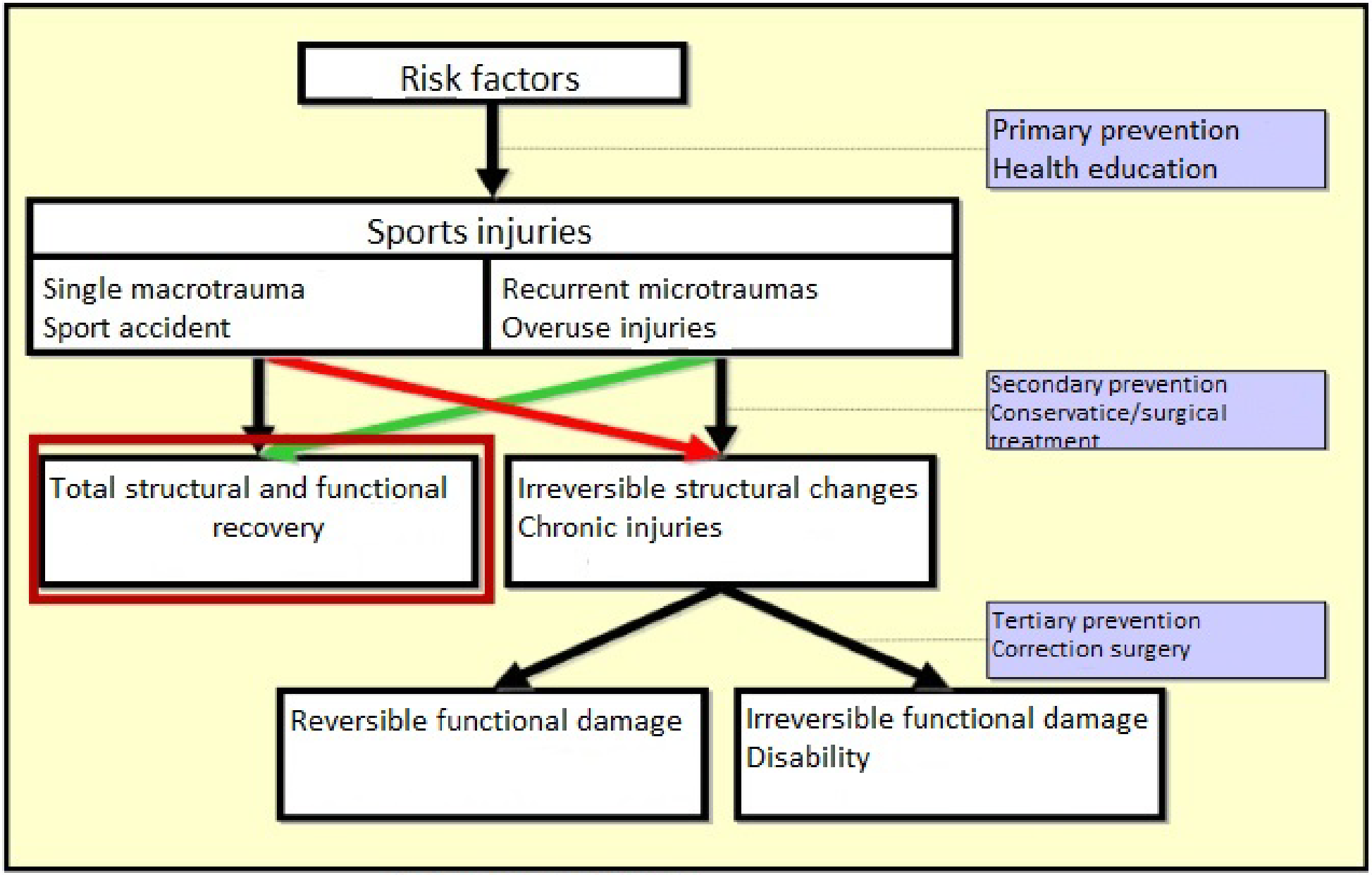
- Medical examination of the team members before travelling
  - Medical history, regularly taken medicines, braces, need of vaccines, malaria profilaxis
- Food and water consumption
  - Drinking bottled water
  - Warm, steamy country → adequate fluid consumption
  - Increased salt intake
- Traveller's diarrhoea
  - 3.-7. days, diarrhoea, nausea, vomiting, fever
  - „Bake it, cook it, peel it, or forget it!"
- Jet lag
  - Change circadian rhytm before travelling
  - Eat, drink, train, sleep according to the local time
- Kinetosis
  - On plane, bus, ship →nausea, vomiting, headache, dizziness
  - Treatment: antiemetic drugs

Rules of on-site care

Categories of sport injuries

- **Acute injuries (sport accidents)**
- Overuse injuries
- Chronic injuries
- Re-injuries

Sports injuries

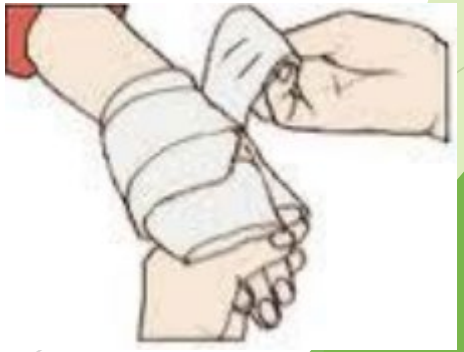


Acute sport injuries

- Wounds, wound care
- Fractures
- Articular injuries
- Muscle injuries
- Injuries of the central nervous system
- Types of bleeding, treatment, first aid

What should we do next to the court?

- Don’t prod
- Disinfect the injured area
- Sterile cover
- Fix it and rest it



Wounds

- Abrasions, bruises
- Vulnus scissum
- Vulnus ruptum (wounds on the face, and scalp)

- Treatment
  - Disinfect the affected area
  - Suture is needed or not? Steri-strip?
  - Sterile cover → sometimes it is difficult because of sweating
  - Tetanus prophylaxis

Fractures

- **Symptoms**
  - Absolute
    - Visible bone (Open fracture)
    - Abnormal motion
    - Crepitation (rasping, crack)
  - Relative
    - Pain
    - Swelling
    - Loss of function
  - **Treatment:** rest, immobilization, pain relief

Articular injuries: Distorsion

- It is most often associated with a (very) short duration of deformation due to indirect force (capsule)
- During the indirect force, the joint surfaces move away from each other and then return to their original position.
- The ligaments of the joint remain intact and no other structures are damaged.
- Therapy: pain relief, rest, may immobilisation (1-2 weeks)

Articular injuries: Dislocations

- The joint surfaces move away from each other and they’re fixed in abnormal, dislocated position

- Can combined with fracture
- Joint capsule and ligaments are always torn

- Shoulder, AC joint, elbow, finger, patella dislocations

- Therapy: rest, immobilization, pain relief, reposition is forbidden except neurovascular damage or patella, IP dislocations

Muscle injuries

- 10-30 % of sports injuries
- Types:
  - Contusion
  - Rupture :
    - Partial (I.-II grade)
    - Total (III. grade, rupture of the fascia)
- Treatment:
  - immobilization, rest, ice, elasctic bandage, observation
  - Compartment syndrome
  - LMWH

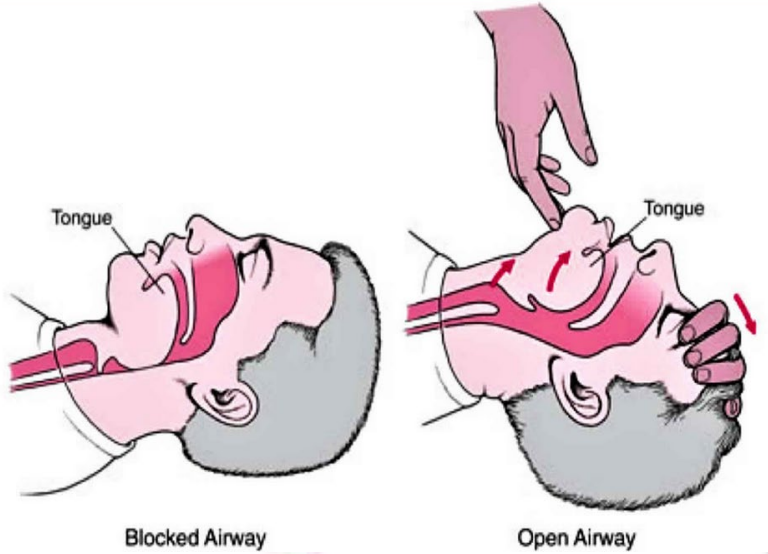
Injuries of the central nervous system

- Head injury
  - GCS score
  - Mild, moderate, severe traumatic brain injury
  - Commotion
    - Symptoms: loss of consciousness, nausea, headache, amnesia
    - Observation is recommended in hospital
- Spine and spinal cord injury
  - Not very common sport injury
  - Don’t move the patient just in case of life-threathening situation
  - Four-person logroll

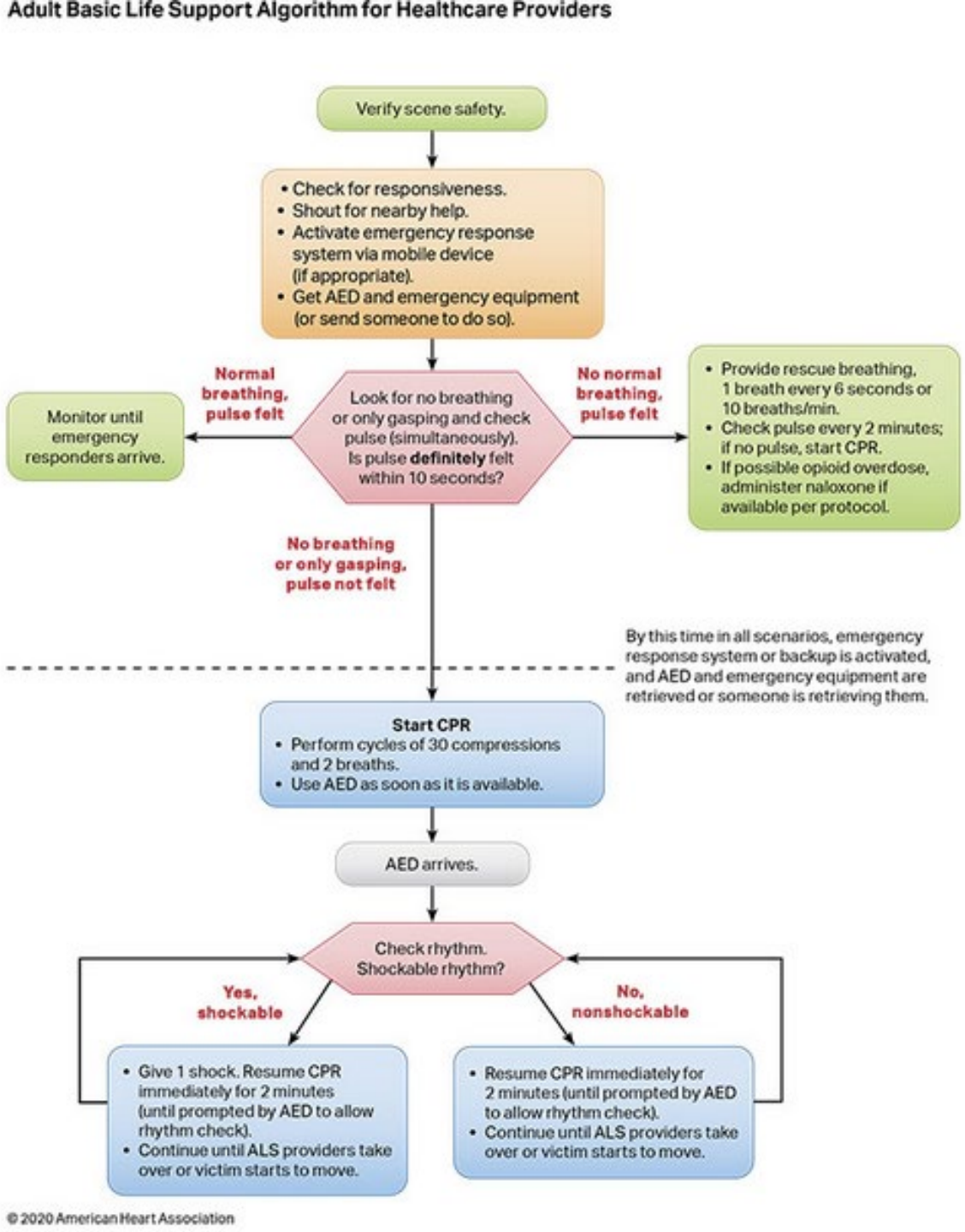
Severe injury

- ccABCDE examination
  - Manage of manifest external bleeding
  - Stabilize cervical spine (manual in line stabilization: MILS)
  - Airway: chin-lift and jaw-thrust maneuver
  - Breathing
  - Circulation: pulse
  - Disability: blood glucose
  - Enviroment

Clinical death → BLS



Basic life support

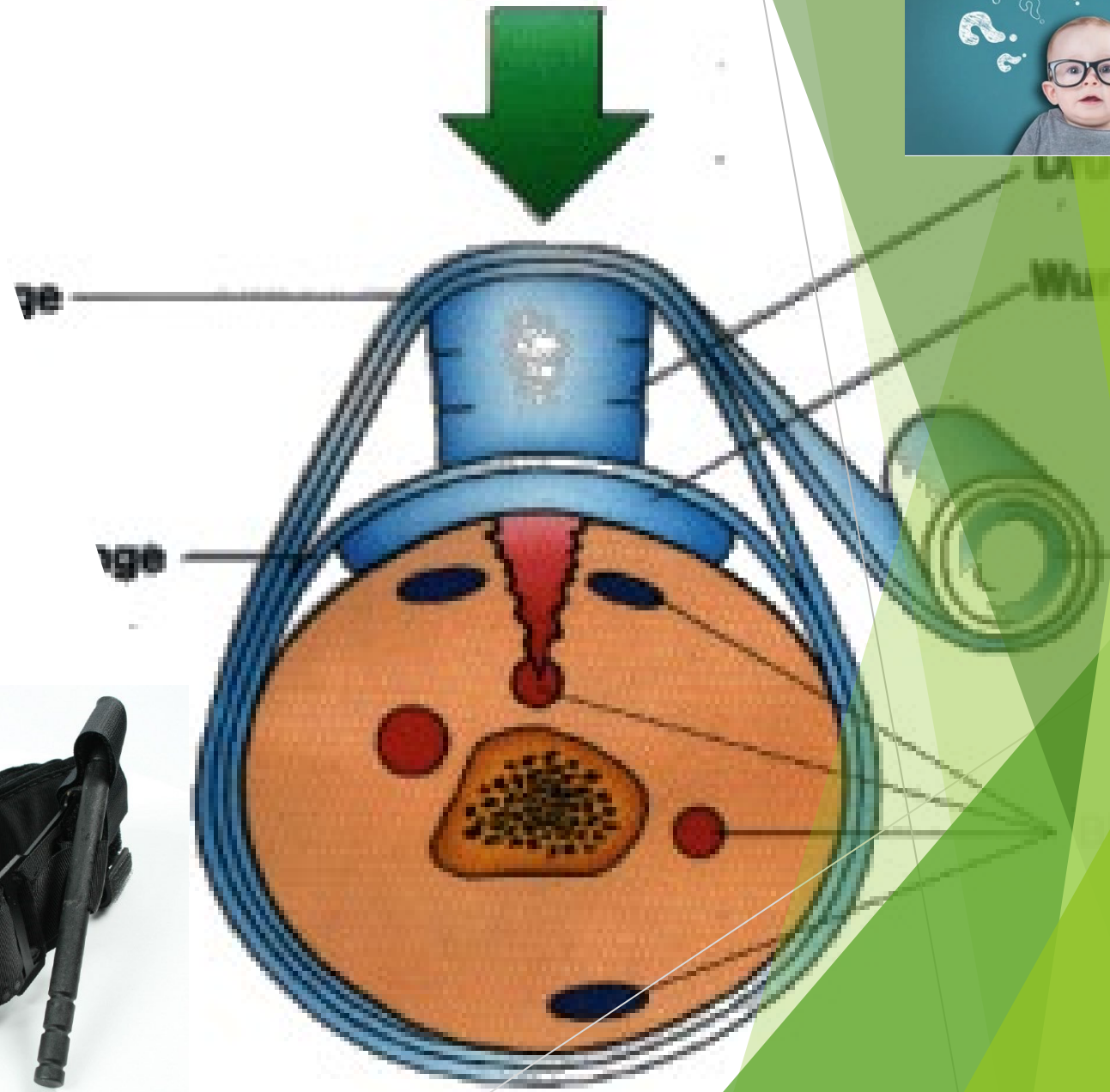


Types of bleeding

- Arterial bleeding
  - Bright, red colour
  - Pulse synch splashing
- Venous bleeding
  - Darker colour
  - Flows smoothly
- Capillary bleeding
  - Leaking, small amount of bleeding

Treatment of bleeding

- Lie down the patient, raise the limb above the heart
- Disinfect the affected region
- Push the arterial pressure point, arterial pressure bandage
- Venous bleeding: pressure bandage
- Capillary bleeding: cover bandage



Thank you for your attention!