European Boxing Medical Handbook

This document is meant as a supplement to the existing World Boxing Competition Rules (10.6 Ringside Doctors, where in-competition rules are clearly defined), it is not in any way meant to be a substitute. This Handbook is written primarily for medical doctors/physicians. As well as offering in-competition advice, it also addresses out-of-competition issues such as completion of examinations and certificates for boxers.

Thank you to Dr. Ed van Wijk for his editorial assistance

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Table of Contents

1 Event Medical Team

Each European Boxing (EB) event must have a medical team present. The medical team is led by an appointed member of the European Boxing Medical Commission (EBMC) and is in charge of all medical aspects at that boxing competition. Local doctors and medical personnel will assist this EBMC doctor (CMO). A minimum of three doctors must be present for 1ring events. A minimum of 5 doctors must be present for two-ring competitions. One of these doctors will be EBMC appointed. A nurse is required for the first Daily Pre-Competition Examination. In practice, this will be likely be for the first three or four days of competition at the Daily Weigh In. Once Boxers have advanced to the second round of competition, these nursing services are no longer necessary. For ambulance and paramedic resources see Chapter 7.

1.1 Duties of the EBMC CMO

Competition planning phases:
Have preplanned the number of doctors, nurses, paramedics
Have reviewed the skills of the doctors, nurses, paramedics to be present in dialogue with the local event CMO.
To control that adequately equipped ambulances and ambulance staff are available and that time schedules have been arranged
To review planned equipment
To go through evacuation procedures
Check which hospitals which will be used in case of a boxer referral and which facilities they have – CT. MRI, neurosurgery department, distance from venue, telephone numbers,
To inform local staff of need to cooperate with antidoping officials if they should be present

Immediately before competition:

- Review systems listed above
- Do a venue check
- Perform a ring evacuation rehearsal
- Review command chain
- Obtain telephone numbers of important local staff, hospitals

Start of and during Competition:

- Participate at the Sport Entry Check if requested
- Participate at the Daily Pre-Bout Examinations at the Daily Weigh-Ins
- Participate as a Ringside Doctor
- Complete all injury registration documents
- Conduct Post-Bout examinations
- Follow the instructions of the EBMC doctor (CMO)
- The CMO must coordinate activities with anti-doping officers

1.2 Duties of EBMC Ringside Doctors:

- Participate at the Sport Entry Check if requested
- Participate at the Daily Pre-Bout Examinations at the Daily Weigh-Ins
- Participate as a Ringside Doctor if requested
- Complete all injury registration documents
- Conduct Post-Bout examinations
- Follow the instructions of the EBMC doctor (CMO)
- Communicate with EBMC CMO
- Cut registration and follow-up

1.3 Duties of local medical doctors:

- Participate at the Sports Entry Check if requested
- Participate at the Daily Pre-Bout Examinations at the Daily Weigh-Ins
- Complete all injury registration documents
- Conduct Post-Bout examinations
- Follow the instructions of the EBMC doctor (CMO)

2 Sports Entry Check

The purpose of this Sports Entry Check (SEC) is to ensure that Boxers have no injuries or illnesses at the start of the event. Boxers themselves do not have to be present at the SEC. Team coaches and/or doctors bring relevant documentation to the SEC. Boxers must be declared Fit to Box and their Record Books must be signed. A decision to prevent a Boxer from participating can be made by the EBMC CMO/doctor at the SEC. His/her decision is final and without the right of appeal.

2.1 Essential documents

The following documents must be provided:

1. The Boxer's Competition Record Book – with name and photo with the Boxers face. If the Boxer has a new Record Book (no previous bouts registered) then the old Record Book must also be presented. The Competition Record Book is reviewed for any relevant information such as probation periods.
2. Pre – Competition Medical Certificate (see 10.2 below) stating that the Boxer is Fit to Box. This document must not be older than 3 months.
   - It must confirm that the Boxer does not have contagious infectious diseases such as HIV 1 and 2, Hepatitis B or C.
   - It must also contain letters from specialist doctors confirming that a Boxer is fit to box after invasive surgical interventions (eg. intraocular laser surgery) in the last 90 days.
   - If the boxer has diabetes, a HbA1c level must be shown to be under 7.5mmol
3. The Doping Control Consent Document signed by the Boxer.
4. A Declaration of Non Pregnancy signed by Female Boxers not older than 7 days before the SEC.
5. Other Relevant Medical Information Consent Documents

2.2 Disqualification

The EBMC doctor in charge of the Sports Entry Check may declare a Boxer unfit to box if:

1. All documents listed above are not presented. It is not unusual to find inadequate documentation at events. If information is incomplete, the Team Doctor or local doctor must complete the Pre-Competition Medical Certificate and return that document at the Entry Check
2. The Boxer has been excluded from boxing because of an injury, typically the boxer may be serving an exclusion period after a KO or RSC.

3 Daily Pre-Bout Medical Examination

The purpose of this examination is to ensure that Boxers are fully capable of Boxing in their respective weight category. A EBMC doctor must be present at all pre-bout examinations - one of the doctors is appointed as being in charge of the procedure.

Local doctors (or Team Doctors) must assist the EBMC doctor. The EBMC doctor must instruct the other doctors on the content of this examination.

The Boxer identifies himself/herself – the doctor checks the Boxer's Competition Record Book name and photo with Boxer´s face and accreditation card.

Each Boxer should have his/her blood pressure and heart rate measured on their first day of competition boxing. A nurse can perform this procedure, as well as measure body temperature. It is not necessary to measure these vital parameters blood pressure at every pre-bout medical examination thereafter unless clinical findings indicate their necessity.

All changes from previous examinations must be recorded.

Only the EBMC doctor in charge of the Daily Pre-Bout Examination may declare a Boxer unfit to box. If a Boxer has been declared unfit to box, this Boxer's Competition Record Book must be brought to the Supervisor for disqualification. A local or team doctor may not approve a boxer from their own nation.

The EBMC doctor in charge of the Daily Pre-Bout Examination must register all new cuts detected and decide if the Boxer is Fit to Box on that day. The EBMC doctor must report all cuts to the other Ringside Doctors, thus raising their awareness during bouts.

A Team Doctor who is an EBMC doctor but has not been appointed to that particular event may assist the EBMC doctor at the Daily Pre-bout Examination but may not serve as a Ringside Doctor at that competition, unless specially credentialed to do so.

Examination:

1. Evaluate Boxers gait while approaching, look for limping, balance problems
2. Blood Pressure – max 140/90, if too high, repeat after 10 minutes (nurse)
3. Heart rate – max 100, if too high, repeat after 10 minutes (nurse)
4. Temperature – max 38 C /100.4 F (nurse)
5. Boxers must not have visible piercing
6. Ask if the Boxer has any problems and examine appropriately if necessary
7. Inspect the face and head for cuts and bruises, make a note of the cuts dimensions
8. Palpate the face for fractures – periorbital, nasal, maxillary, mandibular zones
9. Check pupils. Conduct pupillary light reflex.
10. Inspect the mouth for loose teeth
11. Check passive and active neck and back movements
12. Test active movements of wrists, shoulders, elbows, hips, knees and ankles
13. Inspect and palpate hands, wrists, forearms, elbows
14. Palpate the abdomen for tenderness, splenomegaly, hepatomegaly
15. Inspect skin for potentially contagious herpes and bacterial infections
16. Check the Boxer´s balance
17. Check that Women's breast protectors protects legitimate scoring areas beside the breast
18. Check mouthguard - red colored mouthguards are not permitted.

Boxer with a cut at the Daily Pre-Bout Examination

Boxers may not box with open cuts. Cuts must be closed by subcuticular sutures, glue, strips or a combination of these. Sutures may be subcuticular (or buried) however simple interrupted, simple running, simple locked or various other types of mattress sutures are not allowed. A facial cut can be covered using strips or a liquid/spray plaster. A bruise or an abrasion can be covered with a cut preventative substance such as petroleum jelly eg. Vaseline or Cavilon (Note: Cavilon should not be used in a deep wound).

All recent cuts should be registered so that cuts can be monitored during bouts. This document is then copied and both documents are delivered to the EBMC who supplies one copy to each ringside doctor later in the day.

Disqualification at a Daily Pre-Bout Examination

The EBMC doctor in charge of the Daily Pre-Bout examination may declare a Boxer unfit to box if:

a. The Boxer has any acute injury (e.g. new serious cut, an older cut that has been reopened, fracture etc.) or illness which would endanger that Boxer, the opponent, or officials
b. Findings or disclosed history of the following conditions:
   - Exposed open infected skin lesions
   - Recent surgery – last 90 days
   - Unresolved post-concussion symptoms, which need neurologist clearance
   - Significant psychiatric disturbances or drug abuse
   - Any recent seizure activity within the last 3 months

- Hepatomegaly, splenomegaly, ascites
- Any acute serious illness that would make it dangerous to box
- Obvious Pregnancy

c. If a woman's breast protector protects other legitimate scoring areas beside the breast

4 Ringside Doctors

Only EBMC appointed medical doctors may function as Ringside Doctors. The Ringside Doctors do not necessarily need to have a license to practice medicine in the competition country however they are allowed to offer essential first aid, advise a referee, offer advice on diagnostic and treatment modalities and attempt to ensure the health of all Boxers as a priority.

Ringside Doctors are expected to offer a high "Standard of Care" based on Best Practice principles. The level of medical care varies in different continents and countries. For this reason, this Medical Handbook attempts to define the minimum standard of care to which every country must comply. Countries may of course offer services of a higher standard than those specified.

During a session, the Ringside Doctor may have to examine a Boxer at different phases:

1. Corner Evaluation during a Bout
2. In the ring evaluation of an injured or down Boxer
3. Rapid evaluation off the Field of Play
4. Treatment Room Evaluation – treatment is given by local doctors, but the Ringside Doctor may advise.

The Ringside Doctor must

a. Continuously follow the action in the ring
b. Quickly recognize serious injuries and conditions
c. Signal the available Ringside Doctor that a Boxer needs a Post-Bout examination
d. If necessary, after being called by the Referee, enter the ring and offer first aid to a distressed Boxer
e. If requested by the Referee, advise the Referee if a Boxer is Fit to Box
f. Evaluate all cut boxers as they leave the ring. Register the length, depth and location of cuts
g. Collect and report injury statistics and deliver these to the EBMC doctor
h. Remain at the venue until the last Boxer has finished his/her post-bout medical evaluations and has received any necessary medical recommendations or management plan before leaving the arena
i. Enter restriction period data in the Boxer's Competition book if necessary and report to the Medical Jury Chair.

4.1 Entering the Ring

The Ringside Doctor can enter the ring when the Referee requests the Doctor's evaluation and/or assistance in treating an injured or ill Boxer. The Ringside Doctor must enter the ring immediately if there is a serious injury, entering quickly, calmly and with authority.

The Ringside Doctor should bring medical gloves, a clean oro-pharyngeal airway, clean gauze pads and a penlight into the ring. Only the Ringside Doctor and the Referee will be allowed in the ring with the injured Boxer unless the Ringside Doctor requests assistance from another EBMC doctor or local medical staff.

A EBMC doctor may, at his/her own discretion, indicate to the Referee or the Supervisor that he/she would like to examine a Boxer between rounds; the Referee or Supervisor will then signal "Stop" at the beginning of the next round and the Boxer will be escorted to the neutral corner for a medical evaluation. If there is a risk of serious injury to a Boxer, the evaluating EBMC doctor must notify the Supervisor to terminate the bout and this decision must take precedence over all other considerations.

The Ringside Doctor must not be persuaded by Seconds and must perform an independent evaluation of the Boxer.

4.2 Management of a "Down Boxer" in the Ring

The Referee must always call the Ringside Doctor into the Ring if there has been a Knockout (KO) or serious injury to a Boxer. The Ringside Doctor should enter the Ring from the Neutral Corner as soon as possible and go straight to the fallen Boxer.

4.2.1 Unresponsive Boxer *without* spontaneous respiration (Non-Convulsing)

1. Enter the Ring
2. Remove mouth guard
3. If not breathing spontaneously – perform an observed finger sweep for any broken teeth or foreign body and then remove these
4. If still not breathing spontaneously – perform a chin lift
5. If still not breathing spontaneously, insert oro-pharyngeal tube and initiate CPR

4.2.2 Unresponsive Boxer *with* spontaneous respiration (Non-Convulsing)

1. Remove mouth guard, (open head guard strap if present)
2. Evaluate responsiveness quickly – AVPU, Check pupils
3. Clear airways, observed and careful finger sweep removal of broken teeth/foreign bodies
4. If not able to hold mouth open perform a chin lift/jaw thrust
5. Cervical protection – inline cervical protection with cervical injury suspicion
6. Log Roll into recovery position
7. O2 via mask
8. Once the support medical staff arrives, roll the boxer back onto a stretcher (such as a basket stretcher) and then transfer the boxer from the ring, The boxer must be secured on the stretcher using correctly placed straps.

4.2.3 Convulsing Boxer

Convulsions/seizures are not usually dangerous and few Boxers, if any, suffer sequelae after a convulsion – assuming that the convulsion was post-traumatic and that there is no serious brain pathology. Convulsions are not common in Boxing but can be dramatic. Post-traumatic convulsions usually occur within 2 seconds of impact and can last for some seconds to several minutes. Convulsions that last several minutes should cause more concern and if approaching 5 minutes, sedatives must be administered – usually 5 mg Diazepam

intravenously per minute until the seizure stops (10 - 20 mgs usually suffices) or alternatively, Midazolam 5 mg buccaly. Avoid giving rectal doses in the ring. All Boxers who have received a head blow and who later suffer a convulsion **must** be sent to a neurological unit for further examination. Despite this, post-traumatic convulsions are not necessarily associated with structural brain damage or with the development of epilepsy and have a good outcome. There is little evidence of long-term cognitive damage associated with single convulsive episodes.

Conduct a Primary Survey once the patient becomes conscious. Sometimes the boxer awakes and reacts aggressively – be aware of this.

Once the Boxer recovers, check pupil diameters and pupillary light reflexes. The Boxer leaves the ring with support and must be sent to hospital for further examination.

4.2.4 Removing a seriously injured Boxer from the Ring

Perform any necessary lifesaving treatment in the Ring. If the patient is stable, then secure and immobilize the patient before transporting out of the Ring directly to the ambulance. Repeat a full Primary Survey in the ambulance before departing. Ensure that an IV line has been inserted. There is usually no point in taking a seriously injured athlete to the Venue Treatment Room as this will only delay transport and further examinations. If a spinal injury is suspected then extra attention must be given to spinal immobilization. If the patient is unconscious ask the coach, trainer, teammates or bystanders if they have any relevant information before leaving the venue.

Do not, under any circumstances, be pressurized by team officials into moving a seriously injured patient if you believe that movement would compromise life or limb; a rapid and safe extrication to a safe area is usually the best course of action. If a Boxer is unable to walk from the Ring then assistance should be offered or the Boxer should be carried from the FoP. Boxers will usually decide themselves if they are capable of walking from the FoP unassisted, but should be encouraged to lie down and await stretchering if there is the potential for serious injury. Evacuating a casualty out of the Ring needs training and repeated practice if it is to be carried out without injury to the athlete or the carrying team. Ensure that the equipment to be used is adequate for the height and weight of the athlete to be evacuated and also ensure that the team carrying the Boxer is physically strong enough to lift and carry the injured Boxer. The FoP medical team leader must coordinate and supervise the evacuation. The evacuation route must be as direct as possible to the ambulance and should have been rehearsed before the competition, preferably daily with new teams, and must not include stops to allow the carrying team rests or changes of position.

4.3 Neutral Corner Evaluation of a Boxer

When requested by the Referee, the Ringside Doctor quickly climbs the steps to the neutral corner but does not enter the ring. The Doctor will be asked by the Referee to evaluate a Boxer and is expected to inform the Referee if the Boxer is fit to continue the bout. The Doctor has approximately 1 minute to make a decision. The doctor is usually asked to examine the Boxer for 1 of 4 conditions:

1. A Cut
2. A Nosebleed
3. Unsteadiness, disorientation after a blow to the head
4. Some other injury – shoulder, knee, ankle, rib injury etc.

4.3.1 Cut Evaluation

The Ringside Doctor is expected to inspect a cut and to apply simple local treatment. This intervention should take no longer than 1 minute. When evaluating a cut, the Ringside Doctor must consider the

1. Length of Cut
2. Depth of Cut – abrasion, epidermal, dermal, sub-dermal
3. Is it a Dry Cut?
4. Is it a bleeding cut and if so is there a capillary, venous or arterial bleed
5. Location. Occasionally, a cut will be in an area where deep structures may be injured. In Boxing, as these are usually blunt and not sharp injuries, it is still unusual to have to stop a bout unless lacerations are quite deep and severe. Be wary of cuts over important structures such as the supraorbital nerve, the supratrochlear nerve etc. Be wary of cuts within the Inverted Bell Zone with damage to the eyelids, the tear duct, the vermillion, the NOE area (around or on the bridge of the nose and may thus be part of a compound nasal fracture)?
6. Does the bleeding affect the Boxer's breathing or vision?

4.3.2 Cut Treatment

1. Stop the bout if there is an arterial bleed or extensive venous bleeding
2. Most cuts occur around the eyelids or eyebrows
3. The Ringside Doctor inspects the wound, cleans the wound with a swab, applies a dab of 1mg/ml Adrenalin mixed in a new swab, then applies digital pressure with one hand over the swab for wound for 1 minute whilst inspecting for other injuries and cleaning away blood stains from the face with the other hand. Then remove the swab, evaluate the amount of bleeding. If bleeding continues then the doctor must decide if the bout can continue or not. The Ringside Doctor must inform the referee of his/her conclusion. Say " OK, Box" or shake the head and say " No. No. Stop. No boxing". Most cuts will NOT require that the bout be stopped.
4. Many of the most important facial structures are contained within the inverted bell area (see below) - eyes, eyelids, lacrimal ducts, nose, lip vermillion, mouth, naso-ethmoidal bones.
5. Cuts in this area have potentially more serious consequences than cuts outside this zone. Bouts should be stopped when there are deep cuts in this zone.
6. Cuts outside of this zone rarely cause any structural damage unless they involve the supraorbital or supratrochlear nerves or the temporal artery.
7. Scalp cuts can bleed profusely and while not necessarily dangerous may hinder the Boxer´s vision. Rarely, the bout may have to be stopped for esthetical reasons.

4.3.3 Adrenaline

Topical Adrenaline (Epinephrine) is an effective vasoconstrictor. Wound absorption is not great due to local vasoconstriction and the amount of adrenaline that enters the venous system is probably low, particularly when mixed with Vaseline. Tachycardia is a highly unlikely consequence of local wound treatment. Adrenaline is widely used in professional boxing. The non-topical use of Adrenalin is prohibited on the WADA Prohibited List for 2025.

4.3.4 Hemostats

There are many effective hemostats one the market today. These can be used by team doctors or local doctors in the treatment room. Here is a list of some products:

1. **Collagenates: -** when placed in a wound mould to the contours of the wound. They stick to the wound floor and soak up blood to form a gel. They can absorb up to 20 times their own weight in most cases. When combined with digital compression this is an effective way of stopping bleeding. Removal of the alginate does not appear to tear off any clotting in a wound floor so they can be removed after a minute
2. **Avitene:** – is a Microfibrillar Collagen Hemostat which accelerates clot formation by enhancing platelet aggregation and by releasing proteins to form fibrin. It comes as a powder, liquid or bandage
3. **Thrombin**: - is a bovine protein that aids hemostasis particularly where there is oozing and minor bleeding from capillaries and small venules. It also comes as a powder
4. **Surgicel**: - another absorbable hemostat
5. **Arista** – is, according to the manufacturers, effective against arterial, venous and capillary bleeding. It contains “Microporous Polysaccharide Hemospheres”. It is a type of powder or flour
6. **HaemoCer** is another very effective hemostat.
7. **Collodion**: - is a clear or slightly opalescent, highly flammable, syrupy liquid made from pyroxylin, ether and alcohol. It dries to form a transparent film that is used to close small wounds, abrasions and cuts.

4.3.5 Petroleum Jelly

This is effective in limiting skin friction and for filling a wound.
It should be noted that it can be used to hide other hemostats which are not allowed in competition including super glue.

4.3.6 Suture techniques

When a Boxer´s cut needs to be sutured after a bout, it is important that the suturing doctor is aware of the type of sutures that are acceptable (i.e. subcuticular or buried sutures) if the boxer is to continue in the competition. Visible simple, running or mattress sutures are not allowed in competition.

4.4 Nosebleeds

As a general rule, a boxer can continue boxing with a nosebleed unless there is one of the following conditions:

1. Arterial bleed from the nose
2. Excessive venous bleeding
3. Septum Hematoma
4. Naso-ophthalmo- ethmoidal fracture
5. Extreme pain from a fracture
6. Posterior nasal bleeding with blood in the oropharynx

Nosebleeds usually occur after injury to vessels in the Kiesselbach plexus in the anterior nasal septum region (anterior nose bleeds). Occasionally, epistaxis can have a posterior origin and these bleedings, though rare, can be difficult to manage. Epistaxis is usually caused by local trauma or irritation but can be associated with systemic conditions such as a coagulation disorder or hypertension – these conditions should be excluded in the pre-bout examination.

4.4.1 Nosebleed Management

If there is an arterial bleed (blood spurting out of the nose) then the bout needs to be stopped. With a venous bleed, compress both nares and observe if the Boxer winces with pain. If so, there is probably a fracture present and the Boxer should be removed from the ring for further examination at the medical room.

If the Boxer does not seem to be in pain, place a swab or nasal wool in the affected nares and continue to exert pressure on the nares. Nasal wool can be left in the nostril for the rest of the bout. This swab may be an alginate swab or a swab with Adrenalin (max dose 0.3 mgs). Swabs are removed before the boxer commences. Inspect the mouth for blood. The presence of blood in the back of the mouth or behind the uvula and soft palate indicates significant, and possibly, posterior bleeding and the Boxer should be removed from the FoP for further examination.

If the athlete is stable, there is no sign of arterial bleeding, the athlete is not in pain and the bleeding ceases after compression of the nares, make a quick concussion assessment and if OK, the Boxer may continue (in boxing this concussion examination is rudimentary as the time allowed does not allow the ringside doctor to conduct a proper FoP evaluation).

4.4.2 Arterial Nosebleeds

Arterial nosebleeds are rare but easy to diagnose. The blood spurts out of the nose whereas venous blood seeps from the nose. Arterial bleeds should be compressed immediately using the doctor ´s thumb and index finger to compress both nares. The nose should be compresses as the Boxer leaves the ring and all the way to the treatment room.

4.5 Septum Hematoma

After receiving a blow to the nose, a Boxer may develop a septal hematoma. A hematoma may develop between the cartilaginous septum and the perichondrium/mucous plate. If allowed to develop, pressure from the hematoma may compress blood vessels leading to cartilage necrosis, the “Popeye” or saddle deformity of the septum. As well as being disfiguring this lesion can affect nasal respiration by obstructing the nares.

4.6 Naso-orbito-ethmoidal fractures

These fractures may occur after a high energy frontal blow to the face and nose. There may be collapse and telescoping of the nasal bones under the frontal bone, or laterally into the orbit potentially causing a naso-orbito-ethmoidal (NOE) fracture. One measurement may have clinical significance for the Ringside Doctor - the distance between the center of each pupil (interpupillary distance) is usually twice that of the intercanthal distance (the canthus is the medial corner of the eye). With NOE fractures the interpupillary distance remains the same. Fractures in this complex anatomical area may be difficult to diagnose due to swelling and bruising. Fractures may occur as isolated injuries or as part of more complex facial fractures involving the anterior cranium. Look for associated ocular injury if the eyelids are not too swollen. Fluid from the nose may be due to CSF leaks and may indicate a fracture of the anterior cranial fossa with an anterior dural tear.

4.7 Nasal Fracture

When examining for nasal fractures always ensure that the airway is patent and that the athlete is breathing adequately? Inspect the pupils and check for light reflex. Inspect the mouth for post-nasal drip and stop the bout if there is posterior bleeding. Inspect the NOE area for deformity. Are there any symptoms or signs of concussion and associated head injury?

4.8 Concussion/Head Blow

A Referee should stop a bout if the Boxer is demonstrating signs of altered consciousness, most often manifested as balance difficulties or “glassy” eyed. Occasionally, the Ringside Doctor will be called to evaluate a Boxer for Concussion in the neutral corner, though usually referees will stop the bout before this. It is not possible for a Ringside Doctor to conduct a proper Concussion Evaluation on a Boxer in the short evaluation period (approx. 1 minute).

Therefore, the Ringside Doctor must:

1. Evaluate the Boxer’s state immediately after the blow – stunned, unbalanced, uncoordinated!
2. Evaluate the Boxers approach to the corner – unbalanced, swaying, abnormal?
3. Is the Boxer disorientated, vacant, dismayed?
4. Check Pupils – equal, reactive to light, nystagmus
5. Check for signs of cranial nerve weakness,
6. Speak to athlete – are responses adequate – incorrect, slurred? (*this is difficult to assess if the Doctor and the Boxer do not speak the same language*)
7. Conduct a rudimentary balance evaluation.

If the Ringside Doctor has any indication that the Boxers´ response is abnormal or there is a suspicion of a Concussion - the bout must be stopped and the Boxer sent to the Treatment Room for a primary survey, then a SCAT 6 assessment followed approximately 20 – 25 minutes later with a Concussion Evaluation

5 Post-Bout Examinations

The Post-Bout Examination is one of the Ringside Doctor's most important tasks and must be carried out on ALL Boxers after the bout.

When two uninjured Boxers leave the FoP it is sufficient that the Ringside Doctor enquire if the Boxer has any complaints or injuries, and if so, examine that Boxer. This can be difficult if a new bout is beginning so request that another doctor, if present, conducts this evaluation. Pre-arranged hand signals are often used,

All Boxers who have lost a bout due to a KO, a RCS-I due to head blows or a Boxer who has received multiple head blows must be directed to the Treatment Room and examined by a experienced Doctor.

This examination must include:

1. Head Injury Assessment – immediately on arrival at the Venue Treatment Room
2. Cervical Spine Injury Assessment
3. Other relevant injury examination
4. Concussion evaluation – approx. 20 - 30 minutes after the Head Injury Assessment.

The Ringside Doctor must note an appropriate restriction period in the Boxer's Competition Record Book and whether medical clearance is needed before a to return to boxing.

5.1 Head Injury Assessment

The purpose of the examination is to immediately identify cranial fractures and brain injuries. This should include:

1. Red flag symptom review eg. headache, nausea, vomiting, dizziness
2. Examine the pupils for size, equality and light reflex
3. Examine the eyes for abnormal movement and nystagmus
4. Examining for cranial fractures, deformities, binocular hematomas, Battles sign, CSF leakage
5. Otoscopy for blood (or blood behind an intact eardrum may indicate a basal fracture)
6. Neck pain, neck tenderness and cervical range of motion (ROM)
7. A focused medical history and symptom review (beware language difficulties – use an interpreter)
8. Glasgow Coma Scale (GCS) - It takes practice to be proficient in correctly iden evaluating the Motor (M) segment. When summarizing the score, include each response in your total. (GCS 14 – E4, V4, M6) Some neurosurgeons place more value on the individual E, V, M response scores than on the total accumulative score. Be aware that being proficient in performing a correct GCS evaluation requires practice on a regular basis, particularly when evaluating the various forms of flexion in the M response. There is some discussion around what constitutes an adequate or correct painful stimulus and to which anatomical site it should apply. Some sources advocate pressing a pencil on a finger nail, others prick the skin with a needle, while others recommend applying pressure to the supraorbital ridge, pinching the trapezius muscle

or pressing knuckles on the sternum, or combinations of these to differentiate between localization. Be aware that the patient must understand tifying a correct GCS score, in particular with evaluating the Motor (M) segment. When summarizing the score, include each response in your total. (GCS 14 – E4, V4, M6) Some neurosurgeons place more value on the individual E, V, M response scores than on the total accumulative score. Be aware that being proficient in performing a correct GCS evaluation requires practice on a regular basis, particularly when evaluating the various forms of flexion in the M response. There is some discussion around what constitutes an adequate or correct painful stimulus and to which anatomical site it should apply. Some sources advocate pressing a pencil on a finger nail, others prick the skin with a needle, while others recommend applying pressure to the supraorbital ridge, pinching the trapezius muscle or pressing knuckles on the sternum, or combinations of these to differentiate between localization. Be aware that the patient must understand the doctor's language and instructions otherwise scores may not be representative!

5.2 Cervical Spine Injury assessment in the Treatment Room

If a cervical fracture is suspected, then the Ringside/local Doctor must always suspect a spinal cord injury. In the acute FoP setting it is very difficult to evaluate the level of spinal cord injury. The medical team must therefore err on the side of caution and manage any potential spinal column injury as a spinal cord injury and transfer immediately to hospital.

5.3 Concussion Evaluation

The SCAT 6 concussion evaluation tool (https://bjsm.bmj.com/content/57/11/622) is a **mandatory part of the Post-Bout examination for all Boxers** who have received a KO, a RSC-I due to head blows, or a Boxer who has received multiple head blows where there is a possibility of the Boxer having suffered a concussion. In case of language difficulties use an interpreter.

We have added the following Modified Maddocks Questions:

1. What is your name?
2. Where are you?
3. What day of the week and what year is it?
4. What is your opponent's name?
5. Was the bout stopped? If so, what round?

Ringside or Local Doctors must

1. Complete SCAT6 Card correctly
2. Take a copy of the SCAT6 Card and give it to the Boxer or Coach
3. If discharging the Boxer, give the Boxer information on concussion/head injury symptoms and when to contact a doctor should symptoms worsen
4. The Ringside Doctor decides the minimum suspension period and enters this into the Boxers Competition Record Book duties

NB – Neurological, head and brain injury, and concussion examinations are language sensitive and important findings can be missed if the Boxer and Doctor communicate poorly. Translators are essential and the Coach/Team member

should be an important facilitator of information during the examination and later in case of delayed symptoms

5.4 CT Scan - when to refer a Boxer

A CT Head Scan is useful in diagnosing recent intracranial hemorrhage, edema and cranial fracture. The Ringside/local Doctor should refer a Boxer for a CT Head Scan with:

1. All incidences of Loss of Consciousness (LOC) – irrespective of GCS at time of examination and SCAT 5 results
2. Persistent Amnesia at time of examination
3. GCS 14 or less
4. Deteriorating condition
5. Relevant medical history, medications etc.

Intracranial bleeds can be present even if the GCS at the time of examination is 15. However, boxers will usually have had either a loss of consciousness, persistent amnesia, persistent headache, balance difficulties or nausea/vomiting symptoms.

5.5 Sending a Boxer to Hospital

If a Boxer is sent to hospital, then the Ringside Doctor must register the name of that hospital. If a local doctor accompanies the Boxer then the Ringside Doctor must register the name and telephone number of that doctor.

6 Medical Equipment at all EB events

6.1 Medical Equipment to be brought to an event by EBMC members:

1. Penlight
2. Oro-pharyngeal airway
3. Blood pressure cuff
4. Stethoscope
5. Adhesive tape
6. Oto-Ophthalmoscope

6.2 Medical Equipment to be supplied by the local organization

Local doctors or ambulance staff may supply this equipment.

Ringside - Minimal medical equipment-

1. Stretcher
2. Backboard with straps, basket stretcher
3. Automatic Defibrillator
4. Oxygen tanks with connecting tubes and masks
5. Pulse oxymeter
6. Glucometer
7. Cervical collars of different sizes
8. Oro-pharyngeal airway of different sizes
9. Clean disposable gloves (Sizes 8 – 9, Large, Medium, Small) – one new box daily
10. Swabs, gauze
11. Penlights
12. Hydrogen Peroxide liquid
13. Antiseptic Handwashing liquid

6.3 Medications to be supplied by LOC and available at the FoP

As well as Salbutamol spray, the following injectable medications must be available at ringside – but must be in the control of the local Venue Medical Doctor and administered by the local doctor if necessary.

1. Adrenalin – 1mg/ml (1: 1000) 20 vials daily
2. Diazepam or Buccal Midazolam
3. Anti-emetic
4. Glucose 50 mg/ml infusion bag
5. IV Saline

6.4 Treatment room

There must be sufficient area to examine and treat Boxers with an examination table with appropriate light to allow the Ringside Doctor to visualize and treat injuries. Adequate equipment and medication for any necessary intervention is essential including; venous cannulas, infusion sets, wound cleansing equipment, plasters, swabs, wound glue, suture equipment

7 Ambulances

Ambulance services are to be supplied by the LOC.

1. At competitions with one ring – a minimum of one ambulance must be present at all times
2. At competitions with two rings – a minimum of two ambulances must be present at all times
3. The ambulance/s must arrive 60 minutes before the start of the first bout
4. The ambulance/s may only leave the venue after the last boxer has left the venue
5. There must be proper and near–by parking space for the ambulances just outside the event hall
6. Ambulances must have unhindered exit and entry access to the competition venue
7. Ambulances must meet the CEN Standards (or equivalent) – which is the European Union standard for ambulances and medical transportation vehicles
8. Ambulance staff must have ALS (Advanced Life Support) skills

8 Suspension Periods

A suspension period is a period of time in which a Boxer is not allowed to train, spar or box in competition. Suspension Periods are enforced to protect the Boxer´s own health.

8.1 Single Occurrence of Knockout or RSC-I

8.1.1 No Loss of Consciousness:

If a Boxer suffers a knockout as a result of a blow/blows to the head or if the bout is stopped by the Referee because the Boxer has received heavy blows to the head, then the Boxer may not take part in Boxing or sparring for a period of at least 30 days

8.1.2 Loss of Consciousness less than one Minute:

The Boxer may not take part in Boxing or sparring for a period of at 90 days. This time needs to be recorded carefully.

8.1.3 Loss of Consciousness more than one Minute:

The Boxer may not take part in Boxing or sparring for a period of at least 6 months. This time needs to be recorded carefully.

8.2 Double Occurrence of Knockout or TKO

If during a period of three months a Boxer twice loses a bout due to KO **or** a RSC-I due to a head blow without loss of consciousness, then the Boxer may not take part in Boxing or sparring for a period of 90 days after the second occurrence.

8.3 Triple Occurrence of Knockout or TKO

If during a period of 12 months the Boxer suffers three KOs (with Loss of Consciousness under one minute) OR if three bouts are stopped by the Referee due to the Boxer having received heavy blows to the head, then the Boxer may not take part in Boxing or sparring for a period of one year after the third occurrence. Any combination of knockouts or RSC-I head injuries that equals three under these circumstances qualifies for a one year suspension.

8.4 Protective Regulations

Any Boxer who loses a difficult bout as a result of many blows to the head, or who is knocked down in several successive competitions, may be given a suspension period which bars him/her from taking part in Boxing or sparring for a period of 30 days after the last contest on the advice of the Medical Jury. This protective regulation applies when the knockout or severe head trauma occurs in training or in any other activity (kickboxing, motor accidents, work etc.).

Before a Boxer is allowed to fight after the aforementioned periods have elapsed, he/she must be declared as fit by his/her Doctor or by a neurologist, if possible after a specialist examination has been conducted and CT or MRI of the brain has been carried out.

9 Doping Control at an EB Competition

The CMO and other doctors will assist and facilitate anti-doping officers when necessary or appropriate. EBMC Doctors must not obstruct anti-doping officers in their duties. It is incumbent on all Ringside Doctors to be updated on anti-doping procedures and the WADA Prohibited List (please note this list changes from year to year).

9.1 WADA

https://www.wada-ama.org/en

9.2 WADA Prohibited List

https://www.wada-ama.org/en/resources/world-anti-doping-code-and-international-standards/prohibited-list

10 Medical Certificates and useful links

Boxers participating in EB tournaments must have:

1. A yearly medical examination by a competent and registered medical doctor
2. A Pre-Competition Medical Certificate that states that the Boxer is Fit to Box 10.1 Yearly Medical Examination

10.1 Yearly medical examination

This should be composed of:

1. A review of the family history and past medical history
2. Review of previous surgical operations which could affect a boxer´s ability to box
3. A full evaluation of cardiac, respiratory and neurological function
4. Vital sign values – resting respiratory rate, resting pulse, resting blood pressure, pulse oximetry if available and GCS
5. Ophthalmic examination – pupils, pupillary light reflex, nystagmus, chamber hemorrhages and retinal tears
6. Eardrum inspection for rupture
7. A musculoskeletal examination for injury
8. Evaluation of neuropsychological or neurocognitive changes in the previous year
9. A check if there have been any medical suspensions and that the issue has been resolved
10. Review of medications and ensure that no TUEs are required
11. Diagnose and treat any other conditions
12. Blood tests – HIB and Hepatitis B and C. HIV is an absolute contraindication for boxing. Active Hepatitis B or C or any other transmittable blood diseases are also absolute contraindications. Tests must be performed twice yearly. Results must be managed in a confidential and secure manner.

10.2 Pre-Competition – Boxers`s Medical Certificate

The purpose of this examination is to ensure that the Boxer is not entering a competition with any new or recent injuries, illnesses or concussive symptoms. If the boxer has undergone surgery within the previous 3 months then a letter must be provided by the specialist stating that the boxer is fit to box.

The Boxer`s Medical Certificate (see **www.worldboxing.org/competitions**) must not be more than 3 months old. The doctor confirms this by signing the Boxers Competition Record Book. Blood Tests must also confirm that the Boxer does not have Hepatitis B, C or HIV 1 & 2. If previous blood tests confirm Hepatitis B immunity then documentation must be provided.

(Blood tests must not be older than 6 months on first day of competition)

10.3 Recommended Medical Examinations for athletes wishing to become Boxers

A Boxer should undergo a thorough medical examination on joining a club. A licensed Medical Doctor must conduct this examination. The examination must be adequate to evaluate the Boxer for any disqualifying condition.
A previous medical history as well as family history should be taken. Previous surgical operations should be noted and thought must be given to the consequences of boxing post-operatively. Abnormalities of the pupils and other anatomical or physiological variants should be noted. Current medications and allergies should be noted.
For Women Boxers, a menstrual history should be obtained.
Urine analysis should be conducted to test for glucose, protein and blood.

The examination should include:

1. Vital signs
2. General appearance - general well-being. Look for anomalies,
3. Eyes – pupils, reflexes, visual acuity, visual fields, fundoscopy
4. Ears, Nose and Throat (including otoscopic exam)
5. Cardiovascular Examination
6. Respiratory System
7. Back and Chest
8. Abdomen
9. Genito-Urinary System - a physical examination is generally not required
10. Musculo-Skeletal System
11. Neurological Examination - Includes exam of the cranial nerves, reflexes**,** look for tremors, locomotor impairment, dysarthria, abnormal gait, balance or posture disorders,
12. Evaluation of mental and psychiatric status,

If the history or physical examination suggests the presence of a disqualifying condition or other problem that requires further evaluation for diagnosis, the Doctor must require the Boxer to undergo further appropriate testing and/or referral. The physical examination and any test result must be recorded in the manner prescribed by each National Federation.

10.4 Disqualifying Conditions from Boxing – advice to medical practitioners

(see 10.3 above)

Evidence of or disclosed history of the following conditions in an annual and/or pre-bout examination:

1. Severe chronic infections
2. Severe blood dyscrasias e.g. Sickle cell disease
3. History of Hepatitis B, Hepatitis C or HIV infection
4. Refractive and intraocular surgery, cataract, retinal detachment
5. Myopia of more than -5.0 diopters
6. Recorded visual acuity in each eye of:
7. uncorrected worse than 20/200 and corrected worse than 20/50
8. Exposed open infected skin lesions
9. Significant congenital or acquired cardiovascular, pulmonary or musculoskeletal deficiencies or abnormalities *
10. Unresolved post-concussion symptoms, which will need clearance from a neurologist

11. Significant psychiatric disturbances or drug abuse
12. Significant congenital or acquired intracranial mass lesions or bleeding
13. Any seizure activity within the last 3 years
14. Hepatomegaly, splenomegaly, ascites
15. Uncontrolled diabetes mellitus or uncontrolled thyroid disease
16. Pregnancy
17. Any implantable device which can alter any physiologic process

* In certain cases, it may be difficult to decide if a Boxer can box with an abnormality. Regarding the hand, in order to box at an international level the Boxer must at least have a thumb and two other fingers in each hand. Regarding the foot, the proximal 2/3 s of the foot (the hind foot and middle foot) must be present –this allows boxers with amputated toes to compete but the metatarsals must be intact. Boxers with another type of deformity must apply to the national federation Medical Commission for approval to box at EB competitions.

11 Hygiene Rules for Ringside Doctors

Boxing hygiene is an important topic and essential in preventing the transmission of diseases. These regulations are important for Ringside Doctors, Boxers, Coaches, Referees & Judges.

11.1 Disposable gloves

Disposable gloves must be used when examining an injured Boxer. Splashes of blood on the skin should be immediately washed away with soap and water or disinfectant. Splashes of blood in the eyes or mouth should immediately be rinsed away with plenty of water. If other surfaces are accidentally contaminated, they should be cleaned with a fresh 10% solution of household bleach diluted in water.

11.2 Used gauze

The most frequent Boxing injuries are cuts and abrasions. Nosebleeds are also common. AIDS and Hepatitis may be transmitted through the exchange of infected blood. It is therefore theoretically possible that disease may be transmitted from open wounds. For this reason, Coaches, Referees and Doctors must use clean gauze and disposable gloves when examining cuts or abrasions. The used gauze should be disposed of in sacks designated for that purpose at the ringside.

11.3 Medications During Bouts

The administration of nasal, oral or injectable medications during a bout is forbidden.

11.4 Smelling Salts or Stimulants during a bout

No stimulants or smelling salts are allowed.

11.5 Mouth guards + Dentures

A Boxer should never use a borrowed mouth guard. The mouth guard should fit exactly and comfortably. A poorly fitting mouth guard is useless and can cause buccal irritation or injury. Red coloured mouthguards are not allowed. A mouth guard that has been knocked out of the mouth should be thoroughly washed before replacing. No Boxer should be permitted to wear dentures during a contest. Boxers wearing braces should have the written consent of their orthodontist and have a mouth guard that is fitted to their own braces.

12 Weblink to SCAT 6

(Sport Concussion Assessment Tool)

https://bjsm.bmj.com/content/bjsports/57/11/622.full.pdf