



AIBA 2020 MEDICAL RULES FOR RINGSIDE DOCTORS

Version 2020.10.24

AIBA 2020 Medical Rules

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CHAPTER I – Organization / Structure of AIBA

1.1 Introduction of AIBA

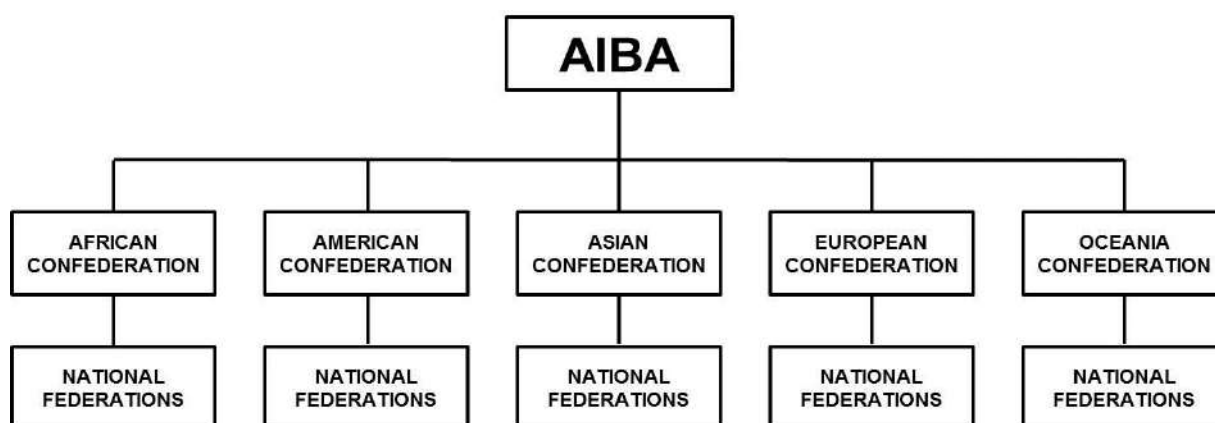
The International Boxing Association (AIBA) is a non-profit international organization. It is **the sole worldwide governing body for the sport of boxing**, recognized by the IOC and has 203 Member Federations.

The International Boxing Association works on behalf of all levels of boxing, men and women, to reinvigorate the sport's grass roots, develop junior, youth and elite boxing, and create new opportunities for semi-pro and pro-boxers via innovative pro style boxing competitions, ~~APB~~ and WSB.

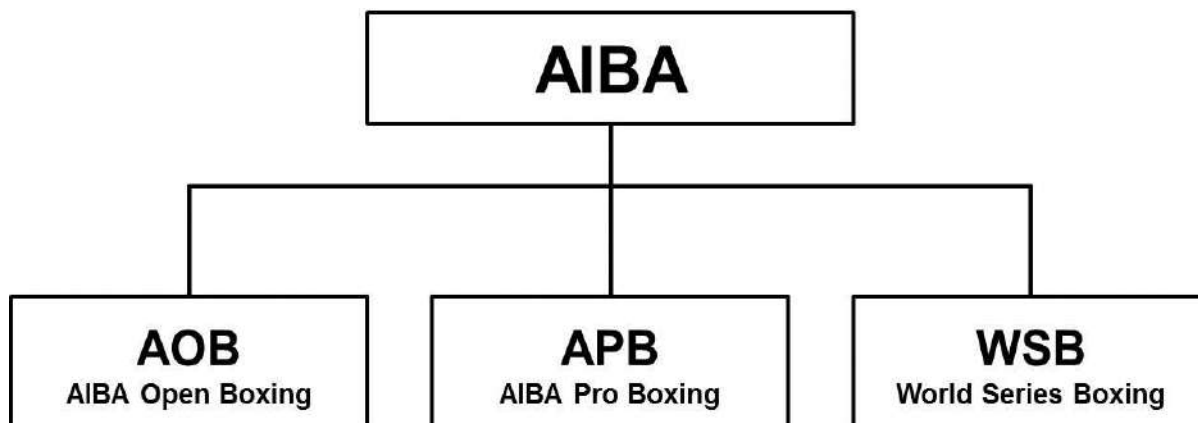
Scope of Intervention

- **Normative function** - Rules setting and enforcement, Boxer's safety preoccupation
- **Operational function** – Event and competition planning as well as organization
- **Development function** - Integrated approach and Boxer centric development of Boxing, different programs to support National Federations, Boxers as well as other members of the Boxing family such as Coaches, Officials, Managers and Medical Personnel (world class expertise, training programs and facility access).

1.2 Governing Structure of AIBA



1.3 Competition Structure of AIBA



1.4 Introduction to AOB

The AIBA Open Boxing (AOB) competition structure is the first step for any boxer who dreams about making a career in boxing from schoolboy to senior level. AOB is the common designation for AIBA boxing competitions including major Men and Women World Championships and Olympic qualifiers in all age categories. By defining these competitions “Open”, AIBA aims to demonstrate their openness to boxers wishing to represent their country via the 197 member National Federations.

For more information, <http://www.aiba.org/inside-aiba/>

1.5 Introduction to WSB

World Series of Boxing (WSB) is a unique team boxing competition created in 2010. WSB is in its sixth season and counts 16 franchises from around the world. A WSB Season represents more than 100 matches of pure boxing action bringing together World and Olympic Champions who compete across ten weight categories. Teams representing franchises compete in a league format that leads to play-offs and a final. The boxers compete without vests or head guards in 5 three minute rounds; 5 bouts per match; 10-Point-Must-System.

For more information, <http://www.worldseriesboxing.com/>

1.6 Comparison between AOB and WSB – Competition Aspects

	AOB	WSB
Official Weigh- In	Within 24 hours before the beginning of the competition but not less than 3 hours before the first bout of the day.	At least 24 hours and not more than 30 hours before the beginning of the first bout
Rest period between bouts for Boxers	12 hours	Minimum 10 days
Number of rounds	<p>Elite Men and Youth Boys: 3 rounds x 3 min</p> <p>Elite Women and Youth Girls: 3 rounds x 3 min</p> <p>Junior Boys and Girls: 3 rounds x 2 min</p>	<p>Elite Men: 5 rounds x 3 min</p>
Rest Period between Rounds	1 minute	1 minute
Equipment	<p>Elite Men: No head guard.</p> <p>Elite Women, Youth Girls & Boys, Junior Girls & Boys: Head guard</p>	<p>Elite Men: No head guard.</p>

1.7 Comparison between AOB and WSB – Medical Aspects

	AOB	WSB
Initial Medical Examination Yearly Examination Pre-competition Examination	Mandatory Mandatory Mandatory	Mandatory Mandatory Mandatory
Medical Examination following Suspension Period	Mandatory	Mandatory
Contact Lenses	Only soft contact lenses allowed	Only soft contact lenses allowed
Beards, moustaches, body piercing, other body accessories	Prohibited	Prohibited
Implanted devices (incl. electrical) or any substance which may alter bodily function	Prohibited	Prohibited
Closure of cuts	Wound glue, subcuticular sutures, liquid skin plasters, strips,	Wound glue, subcuticular sutures, liquid skin plasters, strips
Dressing of wounds, abrasions, swellings	Liquid skin plasters, strips, non-petroleum skin-protective jelly	Liquid skin plasters, strips, non-petroleum skin-protective jelly
Skin protection	Non-petroleum skin- protective jelly (should not be used in a deep cut)	Non-petroleum skin- protective jelly (should not be used in a deep cut)
Time to perform the pre bout examination	Within 24 hours before the beginning of the competition.	24 – 30 hours before the start of the first bout
HIV, Hepatitis B and C**	Every 6 months	Every 6 months

**** IN EXTRAORDINARY CIRCUMSTANCES WHERE THERE ARE LOW SERUM TITRES AND WHERE THE RISK OF TRANSMISSION CAN BE PROVEN TO BE ABSENT, A BOXER MAY APPLY TO THE AIBA MEDICAL COMMISSION FOR EXEMPTION FROM THIS RULE.**

CHAPTER II – AIBA Medical Commission

The AIBA Medical Commission is composed of qualified medical Doctors who are proposed by their National Federations. The AIBA President appoints, replaces and dismisses any Commission member. He may also appoint a Commission member based on his/her expertise even if such person is not proposed by his/her respective National Federation.

The Medical Commission meets at least once a year. Opinions on various boxing medical issues are exchanged. On the basis of these discussions, the Medical Commission submits recommendations, in the interest of the physical and mental welfare of Boxers, to the AIBA Executive Committee.

The Medical Commission may also have other working group meetings. The National Federations must ensure the participation of their Commission members at all meetings. Members who do not attend meetings will be excluded from the Commission unless there are strong mitigating circumstances.

Medical Commission Members are expected to participate as Medical Jury Members and must commit to arranging their schedules according to AIBA Competitions. At all AOB Competitions, including but not limited to the Olympic Games and the World Boxing Championships, a Medical Jury is appointed and is composed of Medical Commission members. Each Medical Jury has a Chairman who is responsible for organizing the medical aspects of the competition. Medical Jury Members must conduct morning pre-bout medical controls, function as Ringside Doctors and/or act as AIBA Doping Control Officer.

Medical Commission members are expected to hold themselves up-to-date on general medical and sports medical issues. Medical Commission members are encouraged to participate in research activities that enhance the sport of boxing. In these times, all Medical Commission and Jury Members are expected to be competent and up-to-date on current concussion, cuts and head injury recognition and management programs.

2.1 AOB Medical Jury

All AIBA AOB Competitions must have a Medical Jury. The Medical Jury is led by the Chairman who is in charge of all medical aspects at the competition. For AOB events with two rings a minimum of 6 Medical Jury Members must be present at each session (two at ringside, 2 for post-bouts, 2 for Head Injury and Concussion evaluation). For AOB events with one ring a minimum of 4 doctors must be present (1 at ringside, 1 for post-bouts, 1 for head injury and concussion evaluation and 1 for doping control). On the day of an event, the Medical Jury Member's duties begin at the morning medicals on the arrival of the boxers at the arena. Medical Jury Members must conduct examinations along with local doctors and visiting National Federation doctors. If there is doubt about a Boxers ability to box due to an injury or medical condition, the decision of the Medical Jury is final and without appeal. In WSB the Medical Jury is composed by the AIBA appointed Doctor (chairman) and one Local Doctor appointed by the LOC.

The Medical Jury Member also functions as a Ringside Doctor.

The Medical Jury is responsible for enforcing AIBA doping regulations at all AIBA Competitions. If a doping control is carried out, a Medical Jury Doctor, who is a Medical Commission Member and qualified in Doping Control, must be present at the tests and ensure that tests are conducted according to accepted norms.

2.2 AOB Medical Jury Chairman Duties

2.2.1 Before a Competition

The AIBA Medical Jury Chairman is responsible for:

- a) Recommending the food plan for all competition participants to ensure appropriate nutrition, choice of dishes, and labeling of food.
- b) Reviewing the event medical plans with a representative of the Local Organizing Committee (LOC), preferably the Chief Medical Officer (CMO) to ensure that they meet acceptable standards. This includes equipment and staff qualifications of doctors, nurses and paramedics. Ensure that ambulances are of acceptable standard (CEN 2 or equivalent). Inform that ambulances must be present at the venue one hour before the start of the first bout and must remain until all Boxers have left the venue. Enquire about the availability of chaperones for doping control and ensure that the Doping Control Area can be locked.
- c) Checking that the LOC has made suitable arrangements with a hospital to receive injured Boxers. Boxers with head injuries must be transported to a facility with neurosurgical and CT Scan facilities.
- d) Inspecting the area designated for Pre-Bout physical examinations and ensuring that there is adequate light for examinations, adequate ventilation, comfortable temperature, adequate security, sufficient tables and chairs for Doctors and for Boxers to be examined
- e) Prepare a roster for Team Doctors, local Doctors and Medical Jury Members to conduct Pre-Bout examinations at the General and Daily Weigh-Ins
- f) Organize and conduct a physical examination of the Referees & Judges on the day of the General Weigh-In. This is carried out by AIBA Medical Jury Members with the purpose of approving the R&J as being medically fit to officiate as specified in the Medical Handbook. In the case of a Referee & Judge being deemed unfit to officiate, this must be reported to the Supervisor and the reason for disqualification must be clearly stated.
- g) Inspecting the medical equipment at ringside, in the Medical Room and in ambulances
- h) Inspecting venue evacuation routes and procedures
 - Ensure that there are no elevators, staircases or other obstructions between the ring and the ambulance(s)
 - Rehearse evacuation procedures with local medical and paramedical staff. To plan the location of the EMT support personnel with respect to the FOP for the competition ensuring the lead EMT has a clear view of the ring and review signals for calling the EMT Team to the Field of Play (FOP)
 - Instruct security to provide crowd control and secure the evacuation route in case of an emergency evacuation
- i) Other duties of the Medical Jury Chairman at the competition venue include:
 - To ensure that the Medical Jury table is properly placed in the neutral corner
 - To check the status for an emergency ring access next to the Doctors' table
 - To ensure the availability of appropriate medication and equipment.
 - Confirm with AIBA office that all boxers have complied with HIV, Hepatitis blood test requirements (it is duty of the Competition Manager and the Supervisor to control this first along with medical record book and boxer's identity)

2.2.2 During Competition

- Meet with the paramedic team (FOP assistance team) prior to the start of the first bout on each competition day to confirm the location of the paramedic team near the FOP and to confirm the "call for assistance" signal that must be given when paramedic assistance is necessary. Rehearse a ring retrieval.
- Check that the ambulance is in place 60 minutes before the start of the first bout.

- Delegate work assignments and schedules for the Medical Jury Members before the first bout. For events with two rings there must be at least 4 Medical Jury members, 1 at each ring for each session and 1 for doping control. For events with one ring there must be at least 3 Medical Jury members, 1 at ringside, and 1 for doping control.
- Collect injury data during all bouts.

2.2.3 After Competition

At the end of each competition day the Medical Jury Chairman must

- a) Consult with the Medical Jury and local Doctors and confirm that post-bout examinations were properly conducted.
- b) Receive a list of injured boxers (with Boxer's name, weight, nationality), what injuries they received and what treatment was initiated. Collect all Cut Registration documents.
- c) After the last day of the competition, the Medical Jury Chairman must complete and provide the "Medical Report on the Competition" to the Chairman, Vice Chairman and to the Secretary of the AIBA Medical Commission and to the AOB Sport Department sport@aiba.org. The "Medical Report on the Competition" must include name, place, number of days of the competition, total number of Boxers who participated, transportation methods, quality of food, any sanitary concerns, any concern with respect to accommodation, any unusual occurrence or risk to Boxers involved, all statistical data collected during the competition in tabulated form and recommendations with respect to safety, competition conditions, or medical concern.
- d) The AIBA Doping Control Officer (DCO) will submit a Doping Control Report after each competition to the AIBA HQs Office and to the AIBA Anti-Doping Sub-Commission Chairperson. The AIBA DCO must also keep a copy of the report.

2.3 AOB Medical Jury Member's duties:

The duties of the Medical Jury Member are:

- Participation at Sport Entry Check (nb. Check of record book and medical documents)
- Participate at the Pre-Bout Examinations at the General and Daily Weigh-Ins
- Participate as a Ringside Doctor
- Conduct Post-Bout examinations
- Participate at the AIBA Doping Control if necessary
- Follow the instructions of the Medical Jury Chairman

2.4 Ringside Doctors Duties

No AIBA Competition may be held without a Ringside Doctor (licensed Medical Doctor at ringside). 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.

AIBA 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, the AIBA 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:

- Corner Evaluation during a Bout
- In the ring evaluation of an injured Boxer
- Rapid evaluation off the FOP
- Medical Room Evaluation

The Ringside Doctor must

- a) Continuously follow the action in the ring
- b) Quickly recognize serious injuries and conditions
- c) Signal the second Ringside Doctor that a Boxer is in need of 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) Collect and report injury statistics and deliver these to the AOB Medical Jury Chairman
- g) 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

2.4.1 Neutral Corner Evaluation of a Boxer:

- When requested by the Referee, the Ringside Doctor runs up the neutral steps to the 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:
 - a) A Cut
 - b) A Nosebleed
 - c) Unsteadiness, disorientation after a blow to the head
 - d) Some other injury – shoulder, knee, ankle, rib injury etc.

(See section on Cut Evaluation)

2.4.2 Entering the Ring:

- The Ringside Doctor will 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, oro-pharyngeal tube, 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 Medical Jury Chairman requests assistance from another Medical Jury Member or from the paramedics
- A Medical Jury Member 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 Medical Jury Member for evaluation
- If there is a risk of serious injury to a Boxer, the evaluating Medical Jury Member 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.

(See section on the Unresponsive or Convulsing Boxer)

2.5 AOB Medical Jury Member for Doping Control

(See Chapter 9)

2.6 Medical Equipment at all AIBA events (AOB, WSB)

2.6.1 Equipment to be brought to Event by Medical Jury Members:

- Oro-pharyngeal tube
- Blood pressure cuff
- Stethoscope
- Adhesive tape
- Oto-Ophthalmoscope
- Examination torch
- Oximeter / Oxygen meter

2.6.2 Medical Equipment to be supplied by the LOC

- Ringside - Minimal medical equipment- stretcher, oxygen tanks, cervical collar, oro-pharyngeal tube, clean disposable gloves, gauze and penlights, defibrillator. Basket stretchers are preferable.
- Medical Room - Sufficient area to examine and treat Boxers. Examination table with appropriate light to allow the Ringside Doctor to see and treat injuries. Adequate equipment and medication for any necessary intervention including: venous cannulas, infusion sets, wound cleansing equipment, plasters, swabs, wound glue, absorbable and non-absorbable sutures, suturing instruments..6.3 Ambulances

- Ambulance services are to be supplied by the LOC.
- A minimum of two ambulances must be present at all times.
- The ambulance/s must arrive 60 minutes before the start of the first bout
- The ambulance/s may only leave the venue after the last boxer has left the venue.
- There must be proper and near-by parking space for the ambulances just outside the event hall.
- Ambulances must meet the CEN 179:2014 Standard (or equivalent) – which is the European Union standard for ambulances and medical transportation vehicles (this standard has been updated in 2014).
- Ambulance staff must have ALS (Advanced Life Support) skills.

2.6.4 Medications to be supplied by the 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.

- Adrenalin – 1mg/ml (1: 1000)
- Diazepam
- Buccal Midazolam
- Morphine
- Anti-emetic
- Glucose 50 mg/ml infusion bags
- IV Saline

CHAPTER III - WSB Ringside Doctors

3.1 WSB Ringside Doctors duties

The Ringside Doctor is the highest Medical Authority in a bout and his/her role is to ensure that the contents of this Medical Handbook are adhered to.

3.1.2 Prior to the Bout

- It is recommended to establish contact with the Supervisor of the event prior to travelling in order to discuss the logistics of the event and any other specifications.
- The Ringside Doctor must travel with appropriate equipment as listed in 2.4.1 above.
- The Ringside Doctor must ensure that a minimum of one ambulance is present (CEN 1789:2014 Standard or equivalent) and that local medical personnel have been booked.
- Paramedics must have ALS (Advanced Life Support) skills.

3.1.3 One Day before the Bout

The Technical Meeting, Medical Check, and Weigh-in must take place the day before the bout. The weigh-in will take place no more than 36 hours before or at latest 3 pm prior to the start of the first bout, as per the WSB Technical and Competition Rules. The exact schedule and location will be sent by email prior to the event by the respective Competition Department, along with the boxer's line-ups. The Ringside Doctor must confirm to the Supervisor that the venue medical services comply with this Medical Handbook requirements.

Technical Meeting:

This meeting will be attended by the ~~boxers (only for APB) and/or~~ team representatives and Coaches where the main competition and event aspects of the next day will be discussed. Ringside Doctor informs the Supervisor if he has additional input for the meeting so it can be included in the presentation.

Medical Check:

The Supervisor first checks the Boxer's Record Book to confirm if the Boxer is eligible and properly registered. Boxers will wait outside of medical examination room and will be called in the order decided by the Ringside Doctor. All Boxers must present evidence of a Yearly Medical Examination, a Pre-Competition Examination, and then go through the medical check, before the Weigh-In. The Ringside Doctor must decide if the Boxer is Fit to Box in accordance with this Medical Handbook requirements. The Ringside Doctor confirms this by signing the Boxer's Record Book.

Weigh-In:

During the Weigh-In, the Ringside Doctor offers assistance if required.

Venue Medical services:

The Ringside Doctor contacts the LOC and the local Doctor and requests an overview of the emergency evacuation plan, the name of the nearest hospital with CT Scan and Neurosurgical facility, the number and quality of ambulances that will be provided, what medical equipment will be available, EMT and doctor rosters etc. in order to ensure that the venue medical service conforms to standards as defined in this Medical Handbook.

3.1.4 Three Hours before the Bout

- The Ringside Doctor must familiarize him/herself with the competition venue and must also conduct a test walk from the ring to the proposed ambulance location in the case of an emergency evacuation during the Bout.
- Check what time the ambulances are supposed to arrive and check that they turn up on time (ambulances are expected to be at the venue no later than 60 minutes before the start of the first bout).
- The Ringside Doctor must attend any relevant meetings with other officials in order to ensure that the medical procedural guidelines are being followed and that any other special requests have been met.

3.1.5 During the bout

- See AOB Ringside Doctors duties (2.3 above).
- If a boxer is brought to the corner, the Ringside Doctor must go on the apron in order to inspect him and make the box/no box decision. Take into account that WSB are professional programmes and that they're being broadcasted live on national and international TV. A decision should be made in a reasonable amount of time.
- Ringside Doctors must ensure that the bout is ONLY stopped when an injury as stated during the Ringside Doctors Workshop has occurred.
- In case a Boxer needs to be transported immediately to hospital for medical treatment, the Ringside Doctor must ensure that the local Doctor accompanies the Boxer to aid with any language barriers – the Ringside Doctor must note the local Doctor's name and telephone number so that the WSB HQs Offices can follow up the case if necessary.
- In case a second Boxer needs medical treatment and/or has to be accompanied by the Ringside Doctor, boxing will not resume until the Ringside Doctor has returned to the ringside position.
- The Ringside Doctor is responsible for allowing ambulances to leave the competition venue.

3.1.6 After the Bout

- A post-bout examination must be conducted on all Boxers (even when the Boxer is not injured), by the Ringside Doctor.
- The following forms must be filled out for all boxers, regardless if they were injured or not and a scanned copy must be sent to the WSB HQs Office as soon as possible or not later than 48 hours after the end of the event:
 - **Post-bout Medical Examination Form** (see Appendix E)
 - Cut Injury Registration Form
 - Medical Restriction & Clearance Form (if applicable, see Appendix F)
- Ambulances must not leave the competition venue until the last Boxer has left.

3.2 Medical equipment at WSB events

Please refer to the Chapter 2.5 above

CHAPTER IV – Medical Check AOB, WSB

4.1 Pre- Bout Examination

The purpose of the Daily Medical Check (the Pre-Bout Examination) is to ensure that Boxers are fully capable of boxing in their respective weight category.

- At least one AIBA Medical Commission member must be present at all pre-bout examinations and one Member is appointed as being in charge of the procedure.
- If local Doctors or Team Doctors are participating, the Medical Jury Member must instruct them of the content of the Pre-Bout examination.
- Boxer identifies himself/herself – check the Boxers Competition Record Book name and photo with Boxers face and accreditation card.
- All changes from previous examinations must be recorded.
- At the first pre-bout examination the boxer must deliver an AIBA Pre-Competition Medical Certificate
- If a Boxer is found to be Fit to Box, the examining Doctor confirms this by signing the Boxer's AIBA Competition Record Book.
- Only the AIBA Medical Commission member 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 AIBA Competition Record Book must be brought to the Supervisor for disqualification.
- An AIBA Medical Commission member who is present at the competition as a Team Doctor may direct the Daily PRE-bout examination but may not serve as a Ringside Doctor at that competition, unless specially credentialed to do so.

Examination:

- Evaluate Boxers gait while approaching the Ringside Doctor: look for limping, balance problems
- Ask if the Boxer has any problems and examine if necessary
- Review the Boxer's Record Book for any relevant information such as probation periods – request SCAT3 documents if previous concussion
- Inspect the face and head for cuts and bruises
- Palpate the face for fractures – periorbital, nasal, maxillary, mandibular zones
- Check pupils. Conduct pupillary light reflex. Exclude nystagmus.
- Ophthalmoscopy for chamber haemorrhage and retinal tears
- Inspect the throat for tonsillar hypertrophy and pharyngeal inflammation
- Conduct Romberg's and Bess Balance Test – noting failures
- Check passive and active neck and back movements
- Test active movements of shoulders, elbows, hips, knees and ankles
- Inspect and palpate hands
- Auscultate heart for murmurs (AOB - General Weigh-In Pre Bout only)
- Auscultate lungs
- Palpate the abdomen for tenderness, splenomegaly, hepatomegaly
- Inspect skin for potentially contagious herpes and bacterial infections

4.2 Boxer with a cut at the Medical Check

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 types of mattress sutures are not allowed. A facial cut can be covered using strips or a liquid or spray plaster. A bruise or an abrasion can be covered with a cut preventative substance such as non-petroleum skin-protective jelly (Note: non-petroleum skin-protective jelly should not be used in a deep wound).

4.3 Women Boxers

In addition to the Boxer's Record Book, women Boxers must present the relevant Declaration of Non-Pregnancy available in the Technical and Competition Rules for each AIBA competitions. This should be controlled at the Weigh-In.

Mixed events:

In case of a mixed AOB event, the LOC must arrange for separate rooms (one for men and one for women Boxers) for the Medical Examination and Weigh-In. If the situation dictates that the same room must be used, men and women must occupy the room at separate times. Weigh-In of Boxers must be done by officials of the same gender.

For WSB, same room and officials are acceptable.

4.4 Disqualification

The Ringside Doctor in charge of the Medical check may declare a Boxer unfit to box if:

- a) The Boxer has any acute injury or illness which would endanger that Boxer, the opponent, or the officials.
- b) Finding or disclosed history of the following conditions in an annual and/or pre-bout examination:
 - Severe chronic infections
 - Severe blood dyscrasias e.g. Sickle cell disease
 - History of Hepatitis B, Hepatitis C or HIV infection
 - Refractive and intraocular surgery, cataract, retinal detachment
 - Myopia of more than -5 diopters
 - Recorded visual acuity in each eye of:
 - Uncorrected worse than 20/200 and corrected worse than 20/50
 - Exposed open infected skin lesions
 - Significant congenital or acquired cardiovascular, pulmonary or musculoskeletal deficiencies or abnormalities*
 - Unresolved post-concussion symptoms, which will need clearance from a neurologist
 - Significant psychiatric disturbances or drug abuse
 - Significant congenital or acquired intracranial mass lesions or bleeding
 - Any seizure activity within the last 3 years
 - Hepatomegaly, splenomegaly, ascites
 - Uncontrolled diabetes mellitus or uncontrolled thyroid disease
 - Pregnancy
 - Any implantable device which can alter any physiologic process
 - Women's breast protector which protects legitimate scoring areas beside the breast

*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. 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 AIBA Medical Commission for approval to box at AIBA competitions.

CHAPTER V - Ringside Doctor Neutral Corner Evaluations

A referee may call the boxer to a neutral corner for an evaluation by the Ringside Doctor. The doctor is usually asked to examine 1 of 4 conditions:

- A Cut
- A Nosebleed
- Unsteadiness, balance problems after a blow to the head (concussive blow)
- Some other injury – shoulder, knee, ankle, rib injury etc.

5.1 Cuts

When evaluating a cut, the Ringside Doctor must consider the

- Length of Cut
- Depth of Cut – abrasion, epidermal, dermal, sub-dermal
- Is it a Dry Cut (not bleeding or only slightly) or a Bloody Cut?
- Location

Occasionally, a cut will be in an area where deep structures may be injured. In Boxing, as these are blunt injuries and not sharp injuries, it is still unusual to have to stop a bout unless lacerations are quite deep and severe.

The Ringside Doctor has the following possible decisions to make:

- Let the bout continue
- In AOB competitions, call the AIBA Cutman to treat the wound, evaluate and then make a decision about continuing or not
- Stop the bout

Most cuts will NOT require that the bout be stopped.

The Ringside Doctor must evaluate the cut and consider the following:

- Is there significant bleeding? Stop the bout if there is an arterial bleed or extensive venous bleeding.
- Is there a transdermal cut over important structures such as the supraorbital nerve, the supratrochlear nerve etc.
- Is there a cut within the Inverted Bell Zone with damage to the eyelids, the tear duct, the vermillion, the infraorbital nerve, the NOE area (around or on the bridge of the nose and may thus be part of a compound nasal fracture)?
- Does the bleeding affect the Boxer's Breathing or Vision?

If the answer to any of these considerations is YES, then a bout should be stopped. If not, the bout can continue, but the wound must be continuously observed.

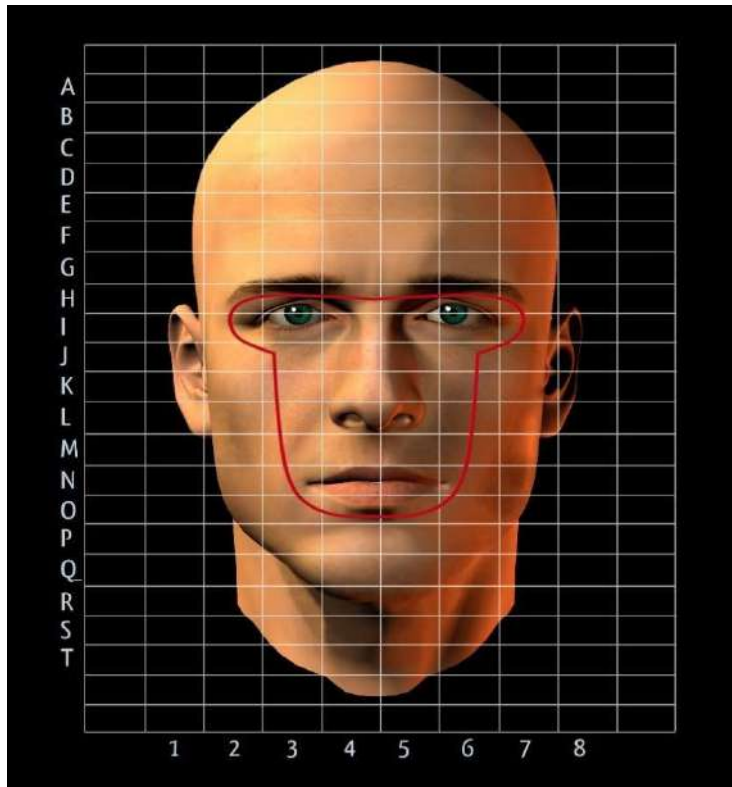
Arterial bleed - If there is an arterial bleed the bout should be stopped immediately. Arterial bleeds will not stop on their own. They need compression for several minutes and possibly suturing. Arterial bleeds are easy to recognize – the blood spurts out of the wound.

Treatment: Evaluate, compress with gauze bandage, get the athlete to hold the bandage with his glove, boxer leaves the ring. Wound management in the treatment room.

5.1.1 Inverted Bell Zone

This Zone (in red) is shaped like an inverted Bell. The most important facial structures are contained within this area – eyes, lacrimal ducts, nose, lips, mouth, naso-ethmoidal bones.

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.



Cuts outside of this zone rarely cause any structural damage unless they involve the supraorbital or supratrochlear nerves or the temporal artery.

Deep cuts in the Inverted Bell Zone. A deep cut is a cut where the dermis has been penetrated. With subdermal cuts subcutaneous tissue is visible – fat, connective tissue, muscle, bone etc. Most deep cuts occur in the face. Deep cuts in the Inverted Bell Zone should be stopped as there is a danger for injury to important underlying structures. For deep cuts outside the Inverted Bell Zone the doctor may use his/her discretion whether to stop the bout, call the cutman to assist or stop the bout.

Examples:

Cut 1



Cut 2



Cut 3



Cut 4



Cut 1 – this should be stopped. The wound is A shaped, goes through the dermis, subcutaneous structures are visible, it is near the lower eyelid, it is near the infraorbital nerve and within the Inverted Bell Zone.

Cuts 2 and 3 – continue boxing, this bout should NOT be stopped. The wounds are straight edged, there is no gaping wound, the dermis may have been penetrated (but if so, only minimally), the wound is over bone and outside of the orbital socket. Cut 3 does not go through the dermis, no subcutaneous structures are visible. Both cut 2 and 3 are outside the Inverted Bell Zone.

Cut 4 - Cut going through the Vermillion of the lip. Goes through the dermis. Is inside the Inverted Bell Zone. The bout should be stopped.

During a bout, a coach may only apply water or non-petroleum skin-protective jelly to a cut.

5.1.2 Adrenalin

Adrenalin (Epinephrine) is a potentially dangerous substance and may cause severe vasoconstriction and tachycardia. Wound absorption is not great due to local vasoconstriction and the amount of adrenalin that enters the venous system is probably low, particularly when mixed with non-petroleum skin-protective jelly. Doses as low as 0.1 mg Adrenalin delivered intravenously can cause profound tachycardia, so Cutmen must be extremely careful with the concentrations used. Adrenalin is also on the WADA Prohibited List for 2015.

For safety purposes, Adrenalin applied topically on a swab or mixed with non-petroleum skin-protective jelly should not be stronger than 1: 10,000 (0.1 mg/ml). Adrenaline administered intramuscularly for anaphylactic reactions should be 1:1000 (1mg/ml)

5.1.3 Suture techniques

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

5.1.4 Use of Surgical Glue in the cases of small cuts

Only to be applied by the team doctor during the rest period of a bout. Ringside doctor can follow up post bout. (Team doctor can be seated just out of the FOP, and can switch places quickly with a second to tend to a boxer if necessary).

5.2 Nosebleeds

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

- Arterial bleed from the nose
- Excessive venous bleeding
- Septum Hematoma
- Naso-ophthalmo-ethmoidal Fracture
- Extreme pain from a fracture

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.

Management of Nosebleed: *If there is 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, continue to exert pressure on the nares and 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 examination is rudimentary as the time allowed does not allow the ringside doctor to conduct a proper FOP evaluation).

Nosebleed 1



Nosebleed 2



Nosebleed 1 - Venous Nosebleed but profuse. Swollen and painful nose. Nasal compression was painful. Stop Bout.

Nosebleed 2 - Moderate nosebleed. Could continue boxing, however if the deformed fracture is new then Stop Bout. If old fracture, continue boxing unless extreme pain.

5.2.1 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 compressed as the Boxer leaves the ring and all the way to the Medical Room.

5.2.2 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.

Clinical findings with a septal hematoma:

Symptoms: pain, inability to breathe through the nose

Inspection: there may be deformity of the nose, broadening of the septum (unilaterally or bilaterally), septa may appear slightly discolored. There may be broadening of the columella, epistaxis, edema and bruising of the nose and periorbital structures. Initial internal inspection may reveal the presence of large blood clots. Any mucosal lacerations should be noted because they may indicate an underlying fracture.

Palpation: of the nasal structures may be painful and reveal indentation. The swelling will initially be soft and fluctuant on palpation, unlike a normal septum which is hard.

Rhinoscopy: There may be swelling, smaller nasal passage (nares) on the injured side, with a swollen, red, medial septal wall. Septum hematomas may not be immediately visible in the ring and may be more obvious at the post-bout inspection. A large clot may obstruct inspection of the septal wall, ask the patient to blow the nose gently, one nostril at a time (this is contraindicated if there is a maxillary or orbital fracture, particularly with a blowout fracture) if there is a suspected septal hematoma.

Management: Stop the bout and refer to a specialist that day.

5.2.3 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, but the intercanthal distance increases (traumatic telecanthus).

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.

Clinical findings with NOE Fractures

Symptoms: The Boxer may have altered consciousness, be in pain, be unable to breathe through the nose, have altered or double vision, epistaxis, dizziness, anosmia.

Inspection: there may be deformity and bruising of the nose, intercanthal area and periorbital structures. Look for traumatic telecanthus. There may be periorbital hematomas. Epistaxis may be present. The nose may be shortened (telescopic changes).

Palpation: of the nasal structures, intercanthal area and lower frontal bone may be painful and reveal indentation or swelling.

Rhinoscopy: In a stable patient, there may be swelling, wounds or bleeding in the nasal passage.

Management: these patients need stabilization of ABC and may have serious head and facial injuries. The Ringside Doctor should stop the bout and refer the Boxer to a specialist hospital with CT facilities.

5.2.4 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 perform a 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?

5.3 Concussion/Head Blow

A Referee should stop a bout if the Boxer is demonstrating signs of altered consciousness. Occasionally, the Ringside Doctor will be called to evaluate a Boxer for Concussion in the neutral corner.

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:

- a) Evaluate the Boxer's state immediately after the blow – stunned, unbalanced, uncoordinated!
- b) Evaluate the Boxers approach to corner – unbalanced, swaying, abnormal?
- c) Is the Boxer disorientated, vacant, dismayed?
- d) Check Pupils – equal, reactive, nystagmus
- e) Check for signs of cranial nerve weakness,
- f) 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*)
- g) Conduct balance test – BESS

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 Medical Room for a Concussion Evaluation. (approximately 20 – 25 minutes after the end of the bout)

CHAPTER VI - Management of a “Down Boxer” in the Ring

The Referee will 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.

6.1 Unresponsive Boxer without spontaneous respiration (Non-Convulsing)

If a Boxer has fallen to the floor ground

- Enter the Ring
- Remove mouth guard (open head guard strap)
- If not breathing spontaneously – perform an observed finger sweep if there is sign of broken teeth
- If still not breathing spontaneously – perform a chin lift
- If still not breathing spontaneously, insert oro-pharyngeal tube and initiate CPR

6.2 Unresponsive Boxer with spontaneous respiration (Non-Convulsing)

- Remove mouth guard, (open head guard strap)
- Evaluate responsiveness quickly – AVPU, Check pupils
- Clear airways, observed and careful finger sweep of broken teeth
- If not able to hold mouth open – chin lift/jaw thrust
- Cervical protection – inline cervical protection
- Log Roll into recovery position
- O2 via mask – (5 - 6 L)
- Once the support staff arrives, roll boxer back onto a scoop stretcher then into a basket stretcher and transfer boxer from ring (in some places a backboard is used instead of a scoop and basket – basket stretchers make transfer much easier and are possibly safer).

Algorithm for KO Boxer Management

AVPU - a detailed neurological examination can take 30 minutes or more to perform, the doctor must have some form of abbreviated examination system that quickly but accurately reflects the patient's neurological status. Therefore, the neurological examination in the primary survey should take no longer than one minute.

No abbreviated examination will substitute a detailed neurological examination but the necessities of the primary survey demand a rapid evaluation before moving on to (E) Exposure or Environmental conditions. The time factor is particularly important if only one doctor is present and especially if there are several casualties that need evaluation. Similarly, if there are concerns about a patient's ABC a shortened neurological evaluation can be performed before returning to do a more detailed examination in the Secondary Survey. Many doctors use the AVPU (Alert, Voice, Pain, Unresponsive) evaluation system, others choose the more internationally accepted, but slightly more time consuming, Glasgow Coma Score. The Team Leader should perform the AVPU evaluation. When time is of the essence, the AVPU system allows for a rapid but limited evaluation of the patient's responsiveness – this is a mnemonic for:

- **Alert** - the patient is alert, conscious with open eyes and is cooperative
- **Voice** - responds to a voice command, but is not otherwise alert
- **Pain** - the patient only responds to a painful stimulus
- **Unresponsive** - the patient is unresponsive to both verbal and painful stimuli

The advantage of this evaluation is that it takes no more than a few seconds to conduct. The AVPU scale is used by many as a "light" version of the GCS, which can be conducted during the Secondary Survey. It is important to repeat the neurological evaluation at regular intervals and to record results in order to detect and record any deterioration in responsiveness.

6.3 Convulsing Boxer

Convulsions/seizures are not usually dangerous and few Boxers, if any, suffer sequelæ 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 Midazolam 5 mg buccal. Avoid giving rectal doses in the ring. Should the convulsions not cease after the first administration of sedatives a repeat dose can be administered after 10 minutes. All Boxers who have received a head blow and who later get 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 and there seems to be little evidence of long-term cognitive damage for single episodes.

Sometimes the boxer awakes and reacts aggressively – be aware of this. Once the Boxer recovers, check the pupils and check light reflexes. The Boxer leaves the ring with support and must undergo an examination in the Medical Room before being sent to hospital for further examination.

Treatment Unconscious Convulsing Boxer in the Ring:

- *Remove mouth guard, (if head guard, open strap)*
- *If possible - Clear airways – beware finger*
- *Observe boxer while convulsing*
- *If convulsion is approaching 5 minutes – danger of status epilepticus – Boxer needs sedative*
- *IV Diazepam! Buccal Midazolam*
- *Cervical protection – inline cervical protection - Log Roll*
- *If delay O2 – mask – (5 - 6 L)*
- *Roll boxer back onto Backboard – Secure – Transfer supporting neck and airway*

6.4 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 no point in taking a seriously injured athlete to the Venue Medical Room as this will just delay treatment. 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 however 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 incapable of walking from the FOP unassisted, but should be encouraged to lie down and await stretchering if there is the potential for serious injury or lower extremity fracture. Carrying a casualty from 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 size and weight of the athlete to be evacuated and that the team carrying the athlete is physically capable of lifting and carrying the casualty. The FOP medical team leader must coordinate and supervise the evacuation. The evacuation route must be as direct as possible and must not include stops to allow the carrying team rests or changes of position as necessary.

6.5 KO or RSC

All Boxers who have lost by KO or RSC, unless they have been transferred to hospital, must report to the Medical room for a medical examination. The "H" or "B" should be added by the ringside doctor, not the Referee. The "H" or "B" should be added according to the definitions in 6.5.1 and 6.5.2

The Ringside Doctor will decide if a SCAT3 evaluation needs to be performed.

6.5.1 KO-H or RSC-H : Stoppages due to punches to the head

6.5.2 KO-B or RSC-B : Stoppages due to punches to the body

6.6 Evaluating a Head Injury

All boxers who have suffered a potentially serious head blow after an RSC or KO, or who have received multiple head blows during a bout must be examined in the Medical Room after leaving the FOP. The Ringside Doctor will conduct an immediate Head Injury evaluation and if OK, a Concussion evaluation. It is often better to wait 30 minutes after the Head Injury Evaluation before conducting a concussion evaluation as many findings may be delayed. In such cases a SCAT 3 Card must be completed.

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

6.7 Sending a Boxer to Hospital

If a Boxer is sent to hospital, the Ringside Doctor must get the name of that hospital and the telephone number of the local doctor that accompanies the boxer. If the local doctor does not speak English, then the boxer must also be accompanied by an English speaking volunteer. In case of a head injury, ensure that the hospital has CT facilities.

CHAPTER VII – The Cutman in AIBA Competitions

A Cutman plays an important role in the Boxer's team due to his/her specific experience in treating bruises and cuts. The Cutman may also be responsible for bandaging a Boxer's hands before the bout. In some countries Cutmen are required to be licensed. However, there is no license at AIBA level as of today.

7.1 Duties of the Cutman

- To bring his/her own materials and equipment
- To bandage the Boxer's hands when required by the Second
- To ensure there is enough ice and water in the corner
- To wear medical gloves at all times during the bout for hygiene reasons
- To attempt to stop a nose bleed or facial cut in less than 1 minute
- To treat hematomas
- The Cutman may take the position of the Coach inside the ring if necessary
- The Cutman cannot stop a bout, but may consult with the Ringside Doctor who may advise the Referee to stop the bout
- The Cutman may advise the Second's about the extent of an injury. It is the Second's responsibility to retire the Boxer if the injury is severe.

7.2 Permitted Accessories for Seconds and Cutmen in the Boxer's Corner:

- Water provided by the LOC
- Non-petroleum skin-protective jelly
- Ice
- Adrenaline (see 5.1.2 above)
- Other coagulant substances such as Avitene, Instat, Thrombin, Surgicel, Gelfoam , Collodion
- Gauze pads/swabs
- Blunted scissors
- Enswell
- Adhesive tape
- Towels
- Cotton wads, and/or soft bandages

Avitene: – is a Microfibrillar Collagen Hemostat which accelerates clot formation by enhancing platelet aggregation and by releasing proteins to form fibrin. Avitene is used in surgical procedures as an adjunct to hemostasis when control of bleeding by ligature or conventional procedures is ineffective or impractical. It conforms and adheres to irregular surfaces. Easily removed with irrigation and is Latex free. It comes as a powder and as a liquid/bandage.

For more information:

<http://www.davol.com/product-listing/sp/avitene-ultrafoam-collagen-sponge/>

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.

For more information

<http://www.fda.gov/downloads/BiologicsBloodVaccines/BloodBloodProducts/ApprovedProducts/LicensedProductsBLAs/FractionatedPlasmaProducts/UCM256531.pdf>

Surgicel: - another absorbable hemostat.

For more information

<http://www.ethicon.com/healthcare-professionals/products/biosurgery/instat-mch-microfibrillar-collagen-hemostat>.

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

CHAPTER VIII - Post-Bout Examination

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 should be done out of the FOP.

All Boxers who have lost a bout due to a KO, RSC-H or a Boxer who has received multiple head blows must be directed to the Medical Room and examined by a Ringside Doctor.

This examination must include:

- Head Injury Assessment – immediately on arrival at Medical Room
- Cervical Spine Injury Assessment
- Other relevant examination
- Concussion evaluation – 30 minutes after the Head Injury Assessment

The Ringside Doctor must specify the appropriate minimum period a Boxer must be restricted from competing (see 8.5) and enter this restriction period into the Boxers Record Book plus indicate it in the Post-Bout Medical Examination Form (Appendix E).

8.1 Head Injury Assessment

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

- Examining the pupils for size, equality and light reflex
- Examine the eyes for movement and nystagmus
- Glasgow Coma Scale
- Examining for cranial fractures, deformities, binocular hematomas, Battles sign, CSF leakage
- Otoscopy for blood (or blood behind an intact eardrum may indicate a basal fracture)
- Neck pain, neck tenderness and cervical range of motion (ROM)
- A focused medical history

Head Injury examination at the Treatment Room (Secondary Survey)

Inspection: Inspect the scalp, skull and face, looking for cuts, bruises and deformities. Look for CSF and/or blood leakage from the ears, mouth and nose. A bleeding nose may indicate a nasal fracture but also a fracture of the base of the cranium. If bleeding from the ear is observed always suspect a cranial basilar fracture. Battle's sign or binocular hematomas may develop after a basilar fracture, though some time may elapse before these signs manifest themselves clinically. Large swellings may indicate a fracture. The incidence of Traumatic Brain Injury is increased with cranial fracture.

Palpation: Palpate gently for indentations or depressed skull fractures. There is always a danger of pushing loose fracture fragments further into the brain if unnecessary pressure is applied.

Neurological evaluation: Conduct a rapid neurological evaluation. Most doctors use the Glasgow Coma Score and record the result and time of the evaluation.

Focused history: If conscious, enquire about the sports event and judge if the athlete has amnesia. Enquire about a sweet taste of sugar in the mouth or palate. This may be due to CSF leakage.

Glasgow Coma Scale

The GCS is almost universally accepted as being a reliable, if not perfect, rapid emergency neurological evaluation system, though it has several widely criticized shortcomings, such as:

- periorbital/ocular trauma or edema may affect eye response evaluation
- mandibular/throat trauma or edema may affect verbal response
- spinal cord, plexus or peripheral nerve injury may affect motor response
- the non-inclusion of brain stem and pupillary reflexes
- the difficulty some healthcare responders have in correctly evaluating the motor response

Despite these critiques, many believe the score to be the best system available for rapidly evaluating consciousness in the prehospital environment.

A score of **14 - 15 pts** indicates a Mild Head Injury. The patient is awake, has partial or total orientation, with no or minimal neurological findings, though may have headache, nausea, vomiting.

9 - 13 pts indicates a Moderate Head Injury. The patient will have reduced consciousness, performs on command, can be conscious, but may have focal neurological findings. These patients may deteriorate and need urgent referral to an appropriate hospital after oxygen has been administered and the spinal column has been adequately immobilized with a cervical collar, backboard and vacuum mattress.

A patient with a GCS score of **4 - 8 pts** has a Severe Head Injury, has significantly reduced consciousness, is unable to follow command and is a critically ill patient.

When a patient has a score of **3 pts**, the patient is clinically unresponsive and is deeply unconscious or not alive. Some patients with a GCS score of 3 pts can recover. On occasions, a conscious patient cannot open their eyes due to swelling after trauma or edema. The E score may thus be invalid, but such swelling would imply major trauma and the possibility of a basilar or facial fracture and thus the need for urgent stabilizing treatment and referral (or if edema, the possibility of anaphylaxis). If impossible to test the E response due to injury, one should still continue to measure the V and M response.

Verbal response (V Score - maximum score of 5)

After testing the patient's arousal ability, the next phase is to measure the patient's awareness.

Start the process by asking relevant orientated questions: "What is your name?" "Where are we?" (Maddock's questions adapted for Boxing).

- Orientated: If the patient answers correctly, a Score of 5V is awarded
- Confused: the patient can formulate sentences and words but the answers to the questions are obviously wrong, a score of 4V is awarded
- Inappropriate: the patient cannot articulate sentences, just a few words that do not answer the question appropriately – Example – "What is the score in this match?" the patient answers incorrectly with words that have no relationship to the question, often just swear words - Score 3V
- Incomprehensible sounds: the patient answers with grunts or groans – Score 2V
- No response; despite both verbal and physical stimuli – Score 1V

Motor response (M Score - maximum score of 6)

The final assessment is of the patient's motor response to verbal and pain stimuli.

- Obeys commands. The doctor makes two commands which the patient completes – Example – "Squeeze my finger" and repeat "Do it again" – a score of 6M is awarded
- Localizes to central pain. The patient does not respond to a verbal stimulus but responds appropriately to a painful stimulus – Example - by pricking the abdominal wall with a needle, the patient purposely moves the arm to remove the needle away from the abdomen. This gives a score of 5M
- Withdraws from pain – Example - by pricking the abdominal wall with a needle, the patient may shift a little or just move an arm towards the source of the pain but fails to locate the source of the pain. Score 4 M
- Flexion to pain. The patient flexes the elbow and internal rotates the shoulder, bringing the forearms to the chest, even clenching the fists. Score 3M
- Extension to pain. The patient extends the elbow and may be associated with internal shoulder, wrist rotation, extending the head backwards, and extending the legs and toes. Score 2M

Eye-opening (E Score - maximum score of 4)

By evaluating the patient's eye movements, the healthcare professional can assess the patient's arousal level:

- The eyes open spontaneously – Example - the patient may have closed eyes due to pain, but opens spontaneously on command – "Hello, are you awake? Open your eyes!" – the patient does so immediately – Score 4E.
The eyes open on verbal command – Example - the patient has closed eyes, does not open them spontaneously, but opens them after repeated commands: "Hello - Open your eyes! Do you hear me, open your eyes!" - Score 3E
- The eyes open after a painful stimulus – Example - the patient does not open the eyes despite repeated verbal commands, but does so in response to application of a painful stimulus such as trapezium squeeze (caution when applying all painful stimuli) – Score 2E
- The eyes do not open to verbal or painful stimuli – Score 1E.

It takes practice to be proficient in correctly identifying 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 fingernail, 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!

8.2 Cervical Spine Injury assessment in the Medical Room

If a cervical fracture is suspected, then the Ringside 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.

Clinical findings with a potential cervical vertebral fracture:

It is common practice to immediately support the neck before conducting the primary survey.

Symptoms: Is there neck pain, shooting pain, midline spinal tenderness

Inspection: Is the patient in pain? Holding the neck? Is there bruising or deformity to the neck region? Does the Boxer appear to have muscle control in their arms or legs?

Palpation: examine for midline spinal tenderness, sensation in the torso and extremities

Movement: if the patient has significant neck pain, immobilize the neck, apply a cervical collar if the neck is in a neutral position. If the neck is in a fixed non-neutral position, it is better to support the neck manually or with a vacuum splint. Applying a rigid cervical collar to a patient with a fixed fracture dislocation is not recommended. If the patient has mild to moderate neck pain, ask the patient to gently move the neck. The Ringside Doctor must decide if movement is normal or restricted, painful or pain free. If movement is normal and pain free and if there are normal neurological findings, it is reasonable to assume that there is no significant neck injury.

All suspected cervical spine injuries must be immobilized from the outset and transferred to hospital for full examination and treatment.

8.3 Concussion Evaluation

AIBA Medical Commission has now introduced the SCAT3 concussion evaluation tool (see Appendix A, with links to English, German and French versions).

This is a **mandatory examination for all Boxers** who have received a KO, an RSC-H, or a Boxer who has received multiple head blows where there is a possibility of Boxer having suffered a concussion.

The Maddock's Questions are not appropriate for Boxing.

We have replaced these questions with the following Modified Maddock's Questions:

- What is your name?
- Where are you?
- What day of the week and what year is it?
- What is your opponent's name?
- What round is it?

Ringside Doctors must:

- Complete SCAT3 Card correctly
- Take a copy
- Give the Boxer information on symptoms and when to contact a doctor should symptoms worsen
- Decide the minimum suspension period and enter this into the Boxers AIBA Competition Record Book duties

8.4 CT Scan - when to refer a Boxer

A CT Head Scan is useful in diagnosing intracranial hemorrhage and cranial fracture.

The Ringside Doctor should refer a Boxer for a CT Head Scan if:

- There has been a Loss of Consciousness (LOC)
- All incidences of KO
- Persistent Amnesia
- GCS 14 or less

8.5 Suspension Periods

A suspension period is a period of time in which a Boxer is not allowed to train, spar or compete. Suspension Periods are enforced to protect the Boxer's health. The suspension period considered by the Ringside Doctor must be indicated specifying the time of the suspension and if clearance is required or not in the Medical Restriction Form.

8.5.1: KO or RSC due to a body blow – KO-B or RSC-B

If a Boxer suffers a knockout as a result of a blow/blows to the body or if the bout is stopped by the Referee because the Boxer has received heavy blows to the body, then the restriction periods shall be decided by the ringside doctor.

8.5.2 Single Occurrence of KO-H or RSC-H

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

Loss of Consciousness less than one Minute:

The Boxer may not take part in Boxing or sparring for a period of at least 3 months. This time needs to be recorded carefully.

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.

8.5.3 Double Occurrence of KO or RSC-H

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

8.5.4 Triple Occurrence of KO or RSC-H

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-H that equals three under these circumstances qualifies for a one-year suspension.

8.5.5 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 (sport, car accidents, etc.).

Before a Boxer is allowed to compete after the aforementioned suspension period has elapsed, the boxer must be declared as fit to box by a Doctor or by a neurologist, if necessary after a specialist examination has been conducted and computerized tomography or MRI of the brain has been carried out.

CHAPTER IX – AIBA Doping Control Officers Duties in AIBA Competitions

At all AIBA events, a doping control is carried out – either during the competition or on the final day. Tests are performed by the National Anti-Doping Organization (NADO) or organizations approved by these. The NADO appoints one Doping Control Officer (DCO) that will carry out the test according to the WADA Code.

The AIBA Medical Jury appoints one of its member as Doping Control Officer. The mission AIBA DCOs to ensure that the NADO DCO performs the testing in accordance to the WADA code. The AIBA DCO signs as well the DCF forms to confirm that the right testing protocol has been followed.

9.1 Some Days before the Test

When arriving at the venue it is necessary:

- To make contact with the LOC
- To conduct a walkthrough of the competition venue
- To assess the location of the Doping Control Station (DCS) with waiting and registration area, process area, refrigeration, toilets
- To determine the location for notification
- Inform LOC of need for DCS Access Control
- Inform LOC of need for Chaperones.

9.2 Same Day as Test after arrival of NADO

The AIBA DCO must check the DCS for:

- Sample collection equipment
 - Collection Vessel
 - Sample Collection Kit
 - Partial Sample Kit
 - Dipstick/ Refractometer
 - Courier Transport Bag
 - Seals
- Forms
 - Doping Control Form (DCF)
 - Chain of Custody Form
 - Supplementary Report Form
 - DCO Report Form

9.3 After sampling has been completed

Copies of the Doping Control Forms (DCF's) must be collected by the AIBA DCO and sent to the respective AIBA Competition Department. If there have been any breaches in protocol, then the AIBA DCO must note this on the DCO Report Form and sign accordingly. The AIBA DCO must be prepared to testify on behalf of AIBA or the Boxer should any subsequent legal challenge to procedural activities occur.

CHAPTER X - AIBA Medical Certificates

AIBA requires that all Boxers participating in AIBA competitions must have:

- A yearly medical examination by a competent and registered medical doctor
- A Pre-Competition Medical Certificate (Appendix C) that states that the Boxer is Fit to Box

10.1 Yearly Medical Examination (Applies for AOB and WSB)

The yearly medical examination should be composed of:

- A review of the family history and past medical history
- A review of previous surgical operations which could affect a boxer's ability to box. All boxers who undergo surgery must receive an approval from their surgeon that they can return to boxing after an operation. The rehabilitation period must also be defined by the surgeon. When conducting an annual medical exam, the examining physician must enquire about previous surgical interventions and consider their consequences before issuing a Fit-to-Box approval.
- A full evaluation of cardiac, respiratory and neurological function
- Vital sign values – resting respiratory rate, resting pulse, resting blood pressure, pulse oximetry if available and GCS
- Ophthalmic examination – pupils, pupillary light reflex, nystagmus, chamber hemorrhages and retinal tears
- Eardrum inspection for rupture
- A musculoskeletal examination for injury Evaluation of neuropsychological or neurocognitive changes in the previous year
- A check if there have been any medical suspensions and that the issue has been resolved
- Review of medications and ensure that no TUEs are required
- Diagnose and treat any other conditions
- Blood tests – HIV, Hepatitis or other transmittable blood diseases must be tested for twice yearly. Results must be sent to the AIBA Office Address

10.2 Pre-Competition Medical Certificate (Applies for AOB and WSB)

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. The Pre-Competition Medical Certificate (Appendix C) must not be more than 3 months old. The doctor confirms this by signing the Boxer's Record Book.

10.3 Additional documents WSB

In addition to the requirements set out in the above paragraph 10.1 and 10.2, the WSB Boxers must also have:

- For WSB, the ~~WSB~~ Annual Medical Form (Appendix ~~F C~~) that states that the boxer is Fit to Box.
- **These forms contain additional medical tests to be performed by the doctor in order to comply with the ~~APB or~~ WSB medical requirements. For further details, please consult the forms attached in the appendix at the end of the Medical Handbook.**

10.4 AIBA Post-Bout Medical Examination Form

After each bout the AIBA Post-Bout Medical Examination Form (Appendix E) must be completed in the case of injury and sent this to the relevant department. This form is valid for AOB/WSB/~~APB~~.

10.5 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:

- Vital signs
- General appearance - general well-being. Look for anomalies,
- Eyes – pupils, reflexes, visual acuity, visual fields, fundoscopy
- Ears, Nose and Throat (including otoscopic exam)
- Cardiovascular Examination
- Respiratory System
- Back and Chest
- Abdomen
- Genito-Urinary System - a physical examination is generally not required
- Musculo-Skeletal System
- Neurological Examination - Includes exam of the cranial nerves, reflexes, look for tremors, locomotor impairment, dysarthria, abnormal gait, balance or posture disorders,
- 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.

10.5 Disqualifying Conditions from Boxing – advice to medical practitioners

(see 4.5 above)

CHAPTER XI - Hygiene Rules

Boxing hygiene is an important component of sports medicine following synopsis of Boxing hygiene from the AIBA Ringside Doctors' Manual. These regulations are important for Ringside Doctors, Boxers, Coaches, Cutmen, Referees & Judges.

11.1 Beards

Beards are a potential danger and are therefore prohibited. Boxers must be clean shaven with no moustaches. During clinches, the beard or facial stubble can get into the opponent's eye and can cause corneal abrasions.

11.2 Bleeding

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 the disease could be passed on via open wounds if both Boxers are bleeding. For this reason, Coaches, Ringside Doctors, Cutmen and Referees 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 Dehydration

Weight loss through a reduction in fluid intake is dangerous to the health and reduces the Boxer's aerobic capacity and performance. Dehydration can lead to liver and kidney damage. Reduction in fluid intake and excessive sweating before the bout are inadvisable and should be avoided.

11.4 Disposable gloves

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

11.5 Embrocation

The use of scents, oils or rubbing alcohol immediately prior to the contest is forbidden. A mixture of sweat and scents etc. may get into the Boxer's eyes and cause damage. Some Boxers are allergic to these substances.

11.6 Fluid and energy intake

Proper fluid and caloric intake is essential to ensure optimal performance. Dehydration is dangerous in all sports and also in Boxing. Coaches must endeavor to ensure that Boxers are properly hydrated.

11.7 Long Hair

Long hair over the forehead limits vision and can cause injuries to the eyes. Hair length must not exceed the neck line. Women with long hair must wear a hairnet or a swimming cap under the head guard.

11.8 Medications During Bouts

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

11.9 Mouth guards

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 nausea. 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. Boxers must not use mouthguards that are red, or any color similar to red (pink, orange, etc.)

11.10 Sponges and Towels

Each Boxer must have his/her own sponge, towel and clean water. The practice of wiping the opponent's face after a bout should be discontinued, as it is unhygienic. Sponges, which have been immersed in dirty water or have been on the floor should never be used to wipe the Boxer's face. The Coaches who are at the ringside should have a supply of clean gauze to examine and apply to a cut or abrasion.

11.11 Smelling Salts or Stimulants during a bout

No stimulants or smelling salts are allowed. Smelling salts contain ammonia, which is a stimulant and can potentially worsen nasal hemorrhaging.

11.12 Non-petroleum skin-protective jelly

The use of a small amount of non-petroleum skin-protective jelly on the forehead and eyebrow to help prevent injury is permitted.

CHAPTER XII – Medical requirements for Referees and Judges

12.1 Medical Requirements

Referees and judges must undergo an annual examination to participate in any AIBA Competition.

In AOB competitions, after the general weigh in for boxers, the R&J has to present his record book to the Medical jury and undergo medical check before competition.

After medical check the R&Js have to present their record book, accordingly filled and signed to the supervisor who will collect these documents allowing them to officiate in the competition they have been assigned to.

Age is not considered to be an absolute factor in the health and physical fitness of a referee and judge. Therefore, the medical examination is designed for and will be administered to referees and judges of all ages.

The examination shall consist of:

- an annual examination undertaken by the personal doctor of the referee and judge in accordance with articles 15 and 16, who shall document such examination;
- a review of such documented examination by an AIBA Doctor who, if satisfied by the examination, will authorise the referee and judge to participate in the competition he/she has been assigned to.

12.2 The Annual Examination

The annual referee and judge medical examination shall include a history of past and recent illnesses, surgical procedures, allergies, medications, disabilities and family history.

The annual examination shall assess for the following conditions, the existence of which will render the referee and judge unfit to participate in AIBA Competitions:

- coronary artery insufficiency, with angina;
- congestive heart failure;
- aortic stenosis;
- left ventricular outflow tract obstructive disease;
- aneurysm;
- myocarditis;
- active thrombophlebitis;
- uncontrolled arrhythmias;
- untreated or poorly controlled hypertension;
- uncontrolled metabolic disease (diabetes mellitus, thyrotoxicosis, myxedema);
- excessive medication;
- renal, hepatic or other metabolic insufficiency;
- uncontrolled psychoneurotic disturbances requiring therapy;
- intermittent claudication;
- moderate to severe pulmonary disease;
- physical disability from neuromuscular, orthopedic or an arthritic condition; or
- myopia (long distance vision with or without corrective lenses of less than 20/80 (British/American), 2.5/10 (European) in both eyes). The wearing of glasses in the ring to correct such conditions is prohibited, although the wearing of contact lenses is permitted.
- In addition to examining for these conditions, the annual examination must include the clinical examination in accordance with the next article.

12.3 Clinical Examination of Referees and Judges

The clinical examination must include the following:

- age, height, weight, and neurological review to include cranial nerve survey, deep tendon reflexes, Romberg and Babinski responses;
- blood pressure (uncontrolled hypertension is disqualifying);
- resting heart rate not to exceed 100 min;
- ophthalmologic exam, including visual acuity (Snellen chart) and fundoscopic exam;
- internationally standardized-graded exercise electrocardiogram (ECG), every three (3) years for those ages forty (40) and above and every six (6) years of those under forty (40); and
- laboratory tests at the discretion of the examiner, in accordance of any eventual symptom observed.

CHAPTER XIII – Table of Appendices

APPENDIX A - SCAT3 Card

English - <http://bjsm.bmj.com/content/47/5/259.full.pdf>

German - www.schuetzdeinenkopf.de

French - http://fecst.inesss.qc.ca/fileadmin/documents/Publications/140722_scat3_FR.pdf

Appendix B - SCAT3 quick guide

Appendix C – AIBA Pre Competition Medical Certificate

Appendix D – AIBA Post - Bout Medical Form

APPENDIX B – SCAT3 Quick Guide

SCAT3 QUICK GUIDE

Designed to be administered and interpreted by medical professionals, SCAT 3 is a standardized tool for evaluating injured athletes for concussion and can be used in athletes aged from 13 years and older (For younger persons ages 12 and under the use of Child SCAT 3 is necessary).

It is intended to be used as a diagnostic tool for concussions while using clinical judgment. The SCAT3 has not been adequately validated as a diagnostic tool used solely to make or exclude the diagnosis of concussion in the absence of clinical judgement: individuals may have a concussion even though parts of the SCAT3 demonstrate normal results.

Pre-season baseline testing with the SCAT 3 can be helpful for interpreting post-injury test scores.

This test encompasses the most current knowledge on concussions, and therefore is broken down into 6 sections:

- the Glasgow Coma Scale (GCS),
- the Maddocks score,
- symptom evaluation checklist,
- the Standardized Assessment of Concussion (SAC),
- balance examination, and - coordination examination.

1-The Glasgow Coma Scale: is the first portion of the SCAT3 and is a series of questions that assess the level of consciousness immediately after the injury. Best eye, verbal, and motor responses are graded from 1 to 4, 1 to 5 and 1 to 6 respectively, and the 3 scores are added up make up the final score. The final score can range from 3 to 15. The following category responses ranges are eye response from a score of 1 being no eye opening to 4 being eyes opening spontaneously, verbal response from no verbal response to oriented and motor response from no motor response to obeys commands. Since this test only looks at whether the athlete is conscious or not and most concussed individuals score close to perfect on the test, the GCS is useful in ruling out serious brain injuries but not in assessing concussions.

2-The Maddocks score: is composed of 5 questions that evaluate the orientation of an athlete that sustained a head injury. The questions require knowledge on recent memory such as the venue the athlete is at, what half the bout is in, and who the team played last game. Questions on recent memory has been shown to be more sensitive in discriminating between concussed and non-concussed individuals than broad orientation questions such as the date, time, and individuals name. It is also noted that especially the date has shown difficulty in both populations and is not helpful in distinguishing those that are concussed.

3-Symptom evaluation check list: Presented to the athlete in a list of 22 different concussive symptoms. Athletes rate each symptom with a number from 0 to 6, 0 being none and 6 being the most severe. The checklist includes symptoms such as headache, pressure in the head, dizziness, balance problems, fatigue, blurred vision, confusion, difficulty concentrating or remembering, sensitivity to light, and sensitivity to noise. Questions on whether the symptoms get exacerbated with mental or physical activity follows the checklist, and the checklist can be administered through self-rating by the athletes, self-rating with clinician monitoring, clinician interview, or self-rating with parent input.

Although the symptom score can be quickly administered and can identify a variety of symptoms, it is heavily subjective it runs the risk of being underreported due to an athlete's desire to return to play earlier. McCrea et al 32 found that 26% of the athletes with a symptom free score on the checklist still showed measurable deficits in cognitive and balance testing. A discussion can be had of whether or not the symptom checklist that is reported can be utilized for concussion evaluation and return to play decisions.

Medical professionals must be aware of this factor and make clinical judgments not solely on reported symptoms but with other measures.

4- Standardized Assessment of Concussion (SAC):

The SAC is a neurocognitive test that also measures orientation, concentration, immediate memory and delayed recall, all of which are sensitive in diagnosing concussions. It has been designed to be administered by any individual without previous experience with neuropsychological testing, and takes about 5-7 minutes to complete:

- Orientation consists of 5 general questions such as the month, date, and time.

- Concentration has 2 tests; the months in reverse order and the digits backward test.

The months in reverse order section requires an athlete to say aloud the months from January to December in reverse order, and the digits backwards test is where an athlete has to repeat a series of numbers that are read out loud backwards. There are 4 trials that increase the amount of numbers in the series from 3 in trial 1 to a total of 6 in trial 4.

- Immediate memory starts with the tester choosing a word bank from one of four provided and reading those 5 words aloud. The athlete then has to repeat the words in any order and this process is conducted for 3 trials. At the end of the SCAT3 a delayed recall task is performed and asks the athlete to recall the 5 words that were given in the immediate memory test.

The immediate and delayed recall memory is thought to have a learning effect where if the clinician does not randomly choose the word bank or consistently uses one set of words for SCAT3 evaluation, athletes may remember these words and will reduce overall accuracy of the test for evaluating concussions.

5-Balance examination:

The balance portion of the SCAT3 utilizes a modified version of the Balance Error Scoring System (BESS) and/or a Tandem Gait test.

The modified BESS is a 3-5-minute test includes 3 stances, double, single and tandem, are each tested with hands on hips and eyes closed for 20 seconds and errors are counted.

There are 6 types of errors: hands lifted off iliac crest, opening eyes, step/stumble/fall, moving hip into more than 30 degrees of abduction, lifting forefoot or heel, and remaining out of test position for more than 5 seconds.

The maximum number of error for each stance is 10, and the number of errors of each stance is added up to give a total score.

The Tandem Gait test tests the ability of the athlete to walk between a 36mm width space for 3m as fast and as accurate as possible with each step approximating their one heel and their other toe together. The athlete must go forward for the full 3m and then turn back, walking a total of 6m and has to complete the test within 14 seconds without stepping off the 36mm line or falling or grabbing anything around them.

6- Coordination examination:

The coordination examination tests upper limb coordination with the Finger-to-nose (FTN) task. The athlete is placed in a comfortable seated position and is instructed to touch their nose as fast and as accurately as possible with their finger from a position where the arm is outstretched pointing to the front. The athlete must do 5 correct repetitions within 4 seconds.

Despite this task being widely used in assessing motor performance, very little research has been conducted to determine the effectiveness of this test in concussed individuals.

However, the test has been shown to have very high intra-tester reliability and limited differences between various individuals, for this reason the test is still recommended as a practical and reliable measure for use by clinicians to assess coordination after concussions.

RELIABILITY AND SENSITIVITY QUESTIONED:

Since it was issued, the SCAT3 became one of the most widely used tools for assessing concussions on the sports sidelines, but, as a 2013 meta-analysis noted, "a number of concerns have been expressed about" its design and scoring".

No large scale studies of concussed athletes to assess the SCAT3's sensitivity and specificity to concussion have been conducted...prospective studies could be conducted to assess the SCAT3's sensitivity (how good the test is in identifying athletes with concussion; for example, a test which is very sensitive will have few false negatives, rarely missing those later found to have concussion) and specificity (a test with high specificity will have few false positives, rarely mis-classifying people without concussion as having concussion)

The balance test component can be significantly affected by high intensity exercise and muscle fatigue for up to 20 minutes following exercise as a result, perceived deficits in balance following head injury may be the result of muscle fatigue, not concussion. The American Academy of Pediatrics' 2010 statement on concussions thus recommends that post-concussion balance testing be performed more than 15 minutes after cessation of exercise, and in a setting in which follow-up assessments can be performed, not on a noisy sports sideline.

The BESS is best used where a baseline score is obtained prior to the start of the season, when an athlete is healthy. Then, repeated scores after concussion can be used to monitor recovery.

As with all concussion assessment tools that rely, at least in part, on self-reporting by athletes of symptoms, a potential consideration in the use of the SCAT 3 symptom checklist is the fact that some athletes (as many as 26% in one study, may underreport symptoms or claim to be "symptom free" even though they are still experiencing symptoms such as cognitive changes in order to avoid removal from the game or to expedite return to play.

Scores are weighted to reflect the number of questions asked in each subsection, rather than the importance of each symptom. For instance, the Glasgow Coma Scale has not been demonstrated to be effective in differentiating between concussed and non-concussed athletes (largely for the reason that even concussed athletes have a score at or near the maximum on the GCS 15-point scale), yet it accounts for a large number of the total points.

IN SUMMARY:

The diagnosis of concussion is a clinical judgment ideally made by a medical professional. In practice, a boxer is suspected to be concussed if, after a direct or indirect blow to the head, he displays any obvious potential signs of concussion including but not limited to:

- loss of consciousness, disorientation or confusion, loss of memory
- balance or motor incoordination, blank vacant look
- abnormal behavior or any combination of these signs

This **boxer** should be removed from the field of play carefully (after emergency vital care, if needed...) and be evaluated by a medical professional (including SCAT 3 test...) before sending him to hospital for further evaluation and follow up.

The **concussed boxer** should not be permitted to return to box before the end of a rest period given mandatorily, and a medical clearance by neurologist, according to each case

APPENDIX C – Medical Certificate Template

Medical Certificate Template

Athlete

NAME : _____

DATE OF BIRTH : _____

SIGNATURE : _____ DATE : _____

Doctor

NAME : _____

TITLE/POSITION : _____

ADDRESS : _____

SIGNATURE : _____ DATE : _____

COMMENTS : _____

Fit to Box
Not Fit to Box

☐☐

QUESTION FOR ATHLETE: IF YES, EXPLAIN

1. Is a Doctor currently treating you for anything?

2. Have you ever been unconscious or had a concussion?

3. Have you been hit hard in the head in the last 6 weeks?

4. Have you had any headache in the last 2 weeks?

5. Do you have any problem with bleeding?

6. Do you have a history of hepatitis B or hepatitis C or HIV infection?

7. Does any disease run in your family? Sudden unexpected deaths?

8. Have you had any surgery?

9. Have you ever had to stay in a hospital?

10. Do you have any medical condition?

MEDICAL CERTIFICATE		ABNORMALITIES		
If Athlete had a Concussion in the past year, please certify that:	Medical Examination following rest period after Concussion was normal Athlete Fit To Box	Normal	Abnormal	
General Medical Exam	List abnormalities not covered in specific system exams below:			
Mental Status/ Psychological	Brief survey	Normal	Abnormal	
Head	Cranial nerves, eyes, pupil size and reactivity, Fundi, vision by chart (record)	Normal	Abnormal	
	Mouth, teeth, throat	Normal	Abnormal	
	Ears	Normal	Abnormal	
	Temporomandibular joint	Normal	Abnormal	
Neck	Cervical spine, lymph nodes	Normal	Abnormal	
Chest	Breath sounds, rib tenderness on compression	Normal	Abnormal	
Cardio Vascular System	Pulse/blood pressure (record)	Normal	Abnormal	
	Heart examination: sounds, murmurs, heaves, size, rhythm	Normal	Abnormal	
Orthopedic System	Upper limb: shoulder, wrist, hand, fingers	Normal	Abnormal	
	Lower limb: foot, ankle, knee, hip	Normal	Abnormal	
Neurological System	Reflexes	Normal	Abnormal	
	Verbal Responses	Normal	Abnormal	
	Motor responses and balance	Normal	Abnormal	
Allergies	(record)	Yes	No	
	Type of reaction (record)			
Medications used	Name and dosage (record)	Yes	No	

Any TUE Submitted ? ☐ No ☐ Yes (If YES, please explain)

APPENDIX D – Post Bout Medical Evaluation Form

AOB/WSB POST-BOUT MEDICAL EVALUATION FORM

Please send signed forms to the appropriate email address within 48h after the last bout

AOB sport@aiba.org

WSB competition@worldseriesboxing.com

BOXER AND MATCH DATA

Boxer Last Name						Boxer First Name						Nationality		Team					
Weight Elite Men						49	52	56	60	64	Other Weight	Match Location - City				Match Date			
						69	75	81	91	91+						_ / _ / _ _ _			

RESULT

Bout Result (circle the correct one)						Bout Decision (circle the correct one)											
WIN		LOSS		PTS		RSC		RSC-I		KO		DQ		TD		NC	


STOPPED BOUT

Bout stopped? (circle correct answer)						Round						Time (mm:ss)																									
YES NO						If Yes:						<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td> </tr> <tr> <td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td></td><td></td> </tr> </table>						1	2	3	4	5	6	7	8	9	10	11	12			:					
																		1	2	3	4	5	6	7													
8	9	10	11	12																																	

KNOCKS

8 Count (KD) (mark n° of times in appropriate round)												RSC/RSC-I/KO (mark "X" in appropriate round)												Loss of Consciousness?	
Head						Body						Head						Body						(Y/N)	N° Seconds
R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6	R1	R2	R3	R4	R5	R6		
R7	R8	R9	R10	R11	R12	R7	R8	R9	R10	R11	R12	R7	R8	R9	R10	R11	R12	R7	R8	R9	R10	R11	R12		

CUTS

		Cut		YES		NO	
		Cut #	n° 1	n° 2	n° 3	n° 4	
		1st time cut?	Y / N	Y / N	Y / N	Y / N	
		Head butt?	Y / N	Y / N	Y / N	Y / N	
		Length	cm	cm	cm	cm	
		Depth	cm	cm	cm	cm	
		Stiches					

INJURIES

Please mark the injury on the left image and circle "YES" or "NO" on the list to the right and write injury description in the "Comment" section

		Head Injury	YES	NO
		Neck Injury	YES	NO
		Shoulder Injury	YES	NO
		Elbow Injury	YES	NO
		Forearm injury	YES	NO
		Wrist/hand injury	YES	NO
		Upper Arm Injuries	YES	NO
		Lumbar Spine Injury	YES	NO
		Chest Injury	YES	NO
		Trunk and Abdominal Injury	YES	NO
		Pelvis/Buttock Injury	YES	NO
		Hip and Groin injury	YES	NO
		Foot injury	YES	NO
		Lower leg injury	YES	NO
		Ankle injury	YES	NO
Knee Injury	YES	NO		
Thigh Injury	YES	NO		

Head Injury

Concussion?		Loss of Consciousness?		If Yes:	N° Seconds?	
YES	NO	YES	NO		YES	NO

Medical Restriction

Restriction?		If Yes:	Resting Period (n° of days)		Requires clearance to box?	
YES	NO				YES	NO

Comment

Neutral Ringside Doctor

Last Name	First Name	Signature	Stamp

Local Ringside Doctor

Last Name	First Name	Signature