



Injury Prevention-Boxing

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Why prevent injuries?

- Health is a priority
- Performance enhancement
- Economical aspects



Injury Prevention Model:





Prevalence of injury

OLYMPIC	No. of athletes	No. of injuries	Boxing
2008-Beijing	10,977	1055	15%
2012-London	10,568	1361	27%
2016-Rio	11,274	1101	30% (Rank 2)







- Type of injury: Laceration/Abrasion (44%) >
 Contusion(bone/muscle) (18%) > Concussion (7%)
- Injured area : Head (65%) > Upper limb (21%) > Lower limb
- Punch type: Hook, straight, upper-cut
- Cause: Dehydration, poor posture (scapular dyskinesia, biomechanics), faulty technique
- Defeated boxers had thrice as injury as the winners



Injury Prevention Model:





Injury prevention: Levels

- Primary (Avoid injury): pre-participation evaluation, physiological aspects of the sport, biomechanical, techniques, gear/equipment, play safe, follow rules, posture, injury prevention programs
- 2. Secondary (Early diagnosis and treatment): Do not ignore/hide the signs and symptoms, regular assessment
- 3. Tertiary (Preventing re-injury): Rehabilitation should be targeted towards reduction and correction of existing disability causing the injury.



Injury prevention





Pre-participation evaluation

- 1. Medical status
- 2. Musculo-skeletal (posture, flags)
- 3. Physiological (aerobic capacity)
- 4. Strength and conditioning
- 5. Nutritional status
- 6. Mental health



Musculoskeletal screening for injury prevention

- Questionnaires:
- Red flag: Individual rehab with a time frame
- Yellow flag: Load management with time frame
- Green flag: Prevention program

Aims and benefits of screening

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- Identify players who may have contra-indications or risk factors for exercise or sport participation
- Detect and identify factors that may predispose players to an increased risk of injury
- Obtain baseline physical data (weight, speed, strength, aerobic endurance)
- Assess the effectiveness of a rehabilitation programme on previous injuries
 - Assess lifestyle variables that may affect injury risk and/or performance



Injury Prevention Program

- Warm-up
- Structured, sport specific
- Focussed towards improving joint movements and joint control in various movements
- Resistance training
- Focussed towards improving muscular strength, power, speed, endurance and general motor performance
- Resistant towards sports-related injuries



Injury Prevention Program

- Boxing is an explosive sport
- Slow is not always good
- Strength training must be ballistic : plyometrics, medicine ball drills, explosive training with weights or jumps
- Machine, free weights, core, functional training
- Functional training exercises (e.g. exercises with trunk rotations in boxing stance position), functional cable machines



Injury Prevention Program

- Neuromuscular training:
- An integrated NMT enhances physical fitness and motor competence
- Prevents aggregation of neuro-muscular deficits
- Cool-down (active):
- Blood-lactate recovery (peripheral)
- Reduces neuro-muscular fatigue (central)





- Head-gear/chest and groin protectors
- Gloves
- Bandaging
- Mouth-guard
- Footwear





















- Head:
- Concussion (90%)



- Whiplash (higher the weight, higher is the punch force)
- Head gear
- ASBC suggestion to bring back head-gears in men
- Neck strengthening exercises





- Dental:
- Tooth/jaw fracture, TMJ injury



- Mouth guard (shock absorption and other properties, teeth clench, mouth closed)
- First used in boxing in 1920s followed by other sports
- Facial muscle exercises





- Hand and wrist:
- Carpal bossing (straight punch with wrist in flexion)
- Boxer's knuckle (faulty hook technique)
- Punching mechanics/wrist position/foam pads or thick bandage over knuckle during training/proper bandaging and wrapping
- Absorb/diffuse detrimental forces





• Hand and wrist:







- Constant monitoring of pain, tenderness, disability
- Grip strength/Intrinsic muscle exercises/forearm exercises
- Push ups with wrapped fists
- Small muscles







- Winners have stronger grip strength (58.2 kg) than non-winners





- Abdominal:
- Contusion, vital organs
- Body punches
- Abdominal strengthening exercises
- Entire core

these punches

- Protects internal organs, prevents muscle strain and contusions
 - Reduce chances of Knock outs through







• Chest Protectors:





- Shoulder:
- Repetitive acceleration and deceleration during training due to repetitive punching (bag)
- Prehab for rotator cuff and scapular stabilizers





SQUATS:

CONTROLLING KNEE COLLAPSE

- Lower limb:
- Knee/Ankle
- ACL/Meniscus/Ankle sprain
- Knee Valgus correction





- FIFA 11+
- Footwear, duration of use, optimally tight shoe lace
- Barefoot training
- Balance exercises (NMT)





- Female athletic triad:
- Low energy availability/Menstrual dysfunction/Low bone density
- Post pregnancy
- Ligaments laxity
- Early diagnosis by close monitoring
- Mammary glands
- Chest-protector

(Rauh et al, 2014, Int. Jl. of Sports PT)





Injury prevention in Adolescents

- Growth spurts
- 'too much, too soon' or 'too little, too late'
- Load management
- Role of parents
- Recognize the injury risks
- Trust the coach
- Injury management







Injury prevention in Adolescents

IOC CONSENSUS STATEMENT ON LOAD IN SPORT AND RISK OF INJURY: HOW MUCH IS TOO MUCH?

PRESCRIBING TRAINING AND COMPETITION LOAD

Reference: by Soligard et al., BJSM 2016

Designed by @YLMSportScience

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Limit weekly increases of their training load to less than 10%, or maintain an acute:chronic load ratio within a range of 0.8 to 1.3, to stay in positive adaptation and thus reduce the risk of injuries



In football, playing two matches, compared to one match per week increases the risk of injury. In these circumstances, consider using squad rotation to prevent large increases in match loads for individual players

Variation in an athlete's psychological stressors should also guide the prescription of training and/or competition loads

Coaches and support staff must schedule adequate

periods, competitions and travel, including nutrition and hydration, sleep and rest, active rest, relaxation

recovery, particularly after intensive training

RECOVERY

strategies and emotional support

Load should always be prescribed on an individual and flexible basis, as there is large intra- and inter-individual variation in the timeframe of response and adaptation to load



6 Sports governing bodies must consider the health of the athletes, and hence, the competition load when planning their event calendars



Injury prevention in Boxing Coaches

- Warm-up (sparring partners/punching pad training)
- Stretching of smaller muscles
- Head gear





1. Prone neck strength

- 🔶 3 x 8-16 repetitions
- Purpose. To strengthen the neck
- Lie on a bench with your head over the edge.
- Slowly lower and raise your head A seconds per repetition
- 3 x 8-16 repetitions

2. Supine neck strength

8 Six 8-16 repetitions

- Purpose To strengthen the neck.
- Lie on a bench with your head hanging over the edge
- Slowly raise and lower your head
- A seconds per repetition
- 3 x 8-16 repetitions

3. Shoulder stability

🔅 3 x 60 seconds

- Purpose To increase shoulder strength and stability
- Kneel on all fours
- Keep your back streight.
- Lift one arm up at a time, stretching out overhead Stabilize the shoulder on the weightbearing arm
- 3 x 60 seconds.

4. Forearm strength 2

8 3 x 8-16 repetitions

- Purpose. To strengthen the forearm muscles.
- Start with pairs of your hands facing upwards
- Here your wrist upwards and return slowly down
- Pertner provides resistance
- 3 x 8-16 repetitions

5. Forearm strength 1

👌 5 x 8-36 repetitions

- Purpose. To strengthen the forearm muscles.
- Start with pain of your hands downwards.
- Recycur wrist upwards and return slowly down
- Partner provides resistance
- 3 x 8-16 repetitions

6. Diagonal arm pull

🖑 3 x 30 ees -

- Purpose. To improve shoulder stability
- Keep your feet stable
- Pail your pertners arms diagonally and rotate trunk. Provide resistance to your partner "s pulls.
- Your partner pushes you forwards and pulls you backwards.
- 3 x 30 sec.

7. Core stability

🗄 3 x 8-10 repetitions

- Purpose to increase core stability.
- Hold on to pertners legs.
- Elevate legs, partner gives pushes in different directions
- Resist the movement and go back to start position
- 3 x 8-10 repetitions

8. Neck strength against wall

- 🔗 3 x 30 seconds
- Purpose To strengthen the resk.
- stand I m from a well, leaning on your forehead
- Rex and extend your neck by going up and down on your toes
- Progression-Increase distance from wall, or perform exercise facing the other way
- Remember to use non-slip shoes
- 3 x 30 seconds



























Multi-disciplinary approach

- Due to the complex systems involved in the nature of injuries, the responsibility for injury risk prevention and/or management cannot lie solely within a single domain of professional practice.
- Interdisciplinary collaboration between technical/tactical coaches, strength and conditioning coaches, team doctors, physical therapists and sport scientists is likely to have a meaningful impact on injury risk.



Multi-disciplinary approach of injury prevention







Intellectuals solve problems, Geniuses prevent them... (Albert Einstein)

