Recovery Strategies in Boxing (Athlete Prospective)

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- Athletes work hard to prepare and perform successfully throughout a competitive season or for major events.
- Unfortunately, many ignore or forget the performance benefits gained through including recovery strategies within their daily training programs.
- There is a tendency for many athletes to limit the use of recovery techniques to times when they are ill or injured.
- Recovery strategies have far more benefits for athletes than merely as tools to assist with rehabilitation.

Recovery – Basic Principle of Training Methodology

- Monitoring the athlete's adaptation to training and stress so that appropriate recovery strategies can be determined.
- Selection of specific recovery techniques and strategies to minimize any residual fatigue from training and competing.

Ideally What An Athlete Should Do ?

- The responsible athlete will monitor training adaptations through regular records in a training diary or log book.
- Maintaining a daily record is an essential training tool for all athletes as it enables them to learn how to evaluate their stress levels and their adaptive responses.
- Learning to recognize "how they feel" is one of the most important skills any athlete can acquire.

4 Critical Markers

- Quality of Sleep
- Morning Resting Heart Rate
- Morning Body Weight (Pre - Training)
- Daily Rating of Fatigue Levels

Daily recording of these 4 critical markers to be recorded regularly by athletes.

These four variables take ***two minutes*** to record and may be the **first warning** to an athlete that he or she is not adapting well to training and other stresses.

4 Types of Fatigue

- METABOLIC Fatigue
- NEURAL Fatigue
- PSYCHOLOGICAL Fatigue
- ENVIRANMENTAL Fatigue

METABOLIC Fatigue

- Arise due to Metabolic Stress (lack of substrate)
- Metabolic stress is a physiological process that occurs during exercise in response to low energy that leads to metabolite accumulation [lactate, phosphate inorganic (Pi) and ions of hydrogen (H^+)] in muscle cells.
- Traditional exercise protocol (*i.e.*, Resistance training) has an important impact on the increase of metabolite accumulation, which influences hormonal release, hypoxia, reactive oxygen species (ROS) production and cell swelling.

Role of metabolic stress for enhancing muscle adaptations: Practical applications
Marcelo Conrado de Freitas, Jose Gerosa-Neto, Nelo Eidy Zanchi, Fabio Santos Lira, and Fabrício Eduardo Rossi

NEURAL Fatigue

- Peripheral Nervous System (localized force production)
- Central Nervous System (drive/motivation)
- During exercise, there is a progressive reduction in the ability to produce muscle forces.
- In addition to impaired function of the motor system, sensations associated with fatigue, and impairment of homeostasis can contribute to impairment of performance during exercise.

Neural Contributions to Muscle Fatigue: From the Brain to the Muscle and Back Again

Janet L. Taylor,[1,2] Markus Amann,[3] Jacques Duchateau,[4] Romain Meeusen,[5,6] and Charles L. Rice[7]

PSYCHOLOGICAL Fatigue

- Emotional and Social Stress Factors

ENVIRONMENTAL Fatigue

- Hot climate
- Cold Climate
- Pollution
- High Altitude

Sports and environmental temperature: From warming-up to heating-up
Sébastien Racinais,[a,b] Scott Cocking,[a,c] and Julien D. Périard[a,d]

Overtraining

Parasympathetic Alterations [a]	Sympathetic Alterations [b]	Other
Fatigue	Insomnia	Anorexia
Depression	Irritability	Weight loss
Bradycardia	Agitation	Lack of mental concentration
Loss of motivation	Tachycardia	Heavy, sore, stiff muscles
	Hypertension	Anxiety
	Restlessness	Awakening unrefreshed

Overtraining Syndrome

Jeffrey B. Kreher, MD†* and Jennifer B. Schwartz, MD‡


Road To
Recovery

Designing a Recovery Strategy

- A good coach understands not only what is being stimulated through prescribed training sessions, but also what is being fatigued.
- The challenge is to recognize the type of fatigue and then select specific strategies to reduce and minimize this fatigue as soon as possible after the training or performance situation.
- 3 major areas for appropriate recovery strategies for an athlete's training program.

Nutrition :- Food & Fuel

- **The most important nutritional consideration for recovery is related to fluid and fuel replacement strategies.**
- Monitor fluid loss so that it is kept to a minimum
- A bodyweight loss of 2 % or more during exercise will result in a reduction in aerobic output.
- If an athlete becomes excessively dehydrated – it can be dangerous and may lead to overheat his/her aerobic capacity (reduced by upto 6%)

- **Adequate supplies of glycogen in the muscle and in the liver are needed to support the energy demands and promote recovery for the next training session.**
- Athletes can minimize the effects of metabolic fatigue by starting each session with their fuel tanks full.
- They can **top-up during the event with sports drinks** and take other carbohydrate and protein foods.
- Small amounts of protein taken with carbohydrates before, during, and after hard training, are also recommended to help minimize muscle protein breakdown as a result of heavy workloads.

- Nutritional supplements should be used with caution and sound scientific advice.
- Many coaches and athletes are pressured to use supplements and new products
- It is often difficult to source reliable evidence-based information about what is appropriate and safe to use.

Physical Therapies

Passive Rest

- **Passive rest, particularly in the form of sleep, is an area that is not well understood by either coaches or athletes.**
- Sleep is probably the most important form of recovery an athlete can have. A good night's sleep of seven to nine hours provides invaluable adaptation time for adult individuals to adjust to the physical, neurological, immunological and emotional stressors that they experience during the day.
- An adolescent experiencing heavy training and a growth spurt may need up to ten hours a night and athletes who are sick often need more sleep as a part of recuperation.
- However, too much sleep can be detrimental to performance as it can slow down the central nervous system and lead to increased levels of melatonin that can leave the athlete feeling slow and lethargic.

Active Rest

- Active rest is much undervalued by athletes.
- **The end of the loading component of the training session is an ideal time to introduce active recovery activities.**
- Activities can be selected to fulfill several tasks. They can either help : -
  - To recover the physiological state of the athlete (light jog, walk, swim or cycle to recover the lactate system)
  - Recover neural fatigue (light jostling/shaking of muscle groups)
  - Or used as a means of psychological and emotional restoration (light but different activities).

- Cross-training can also be used as a form of active rest provided the work intensities are modest (light aerobic) and the exercise undertaken are different to those normally performed in training, e.g., pool work after a game.
- **Rest days are essential.**
- **Ideally at least one day per week should be a non-training day.**
- This allows time for physical and psychological recovery as well as time for other interests and personal and family relationships.

Hydrotherapies

- A wide range of hydrotherapies : -
  - Spas
  - Pools
  - Steam rooms
  - Cold pools
  - Contrast temperature protocols
- Underwater massaging (using the jets in a spa) following plyometrics training helped athletes to maintain leg-explosiveness on the following day. In contrast, passive rest after such training resulted in a significant reduction in leg power.

(Vitasalo et al., 1995).


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- First have a shower
- Followed by a spa (39 to 40°C) for three minutes and then
- A cold shower or a plunge into a cold pool (10 to 15 °C) for 30 to 60 seconds.
- Warm immersion produces vasodilation of the peripheral circulation and the cold immersion encourages vasoconstriction.
- Three to five sets of this protocol producing rapid vasodilation and vasoconstriction will accelerate blood flow.

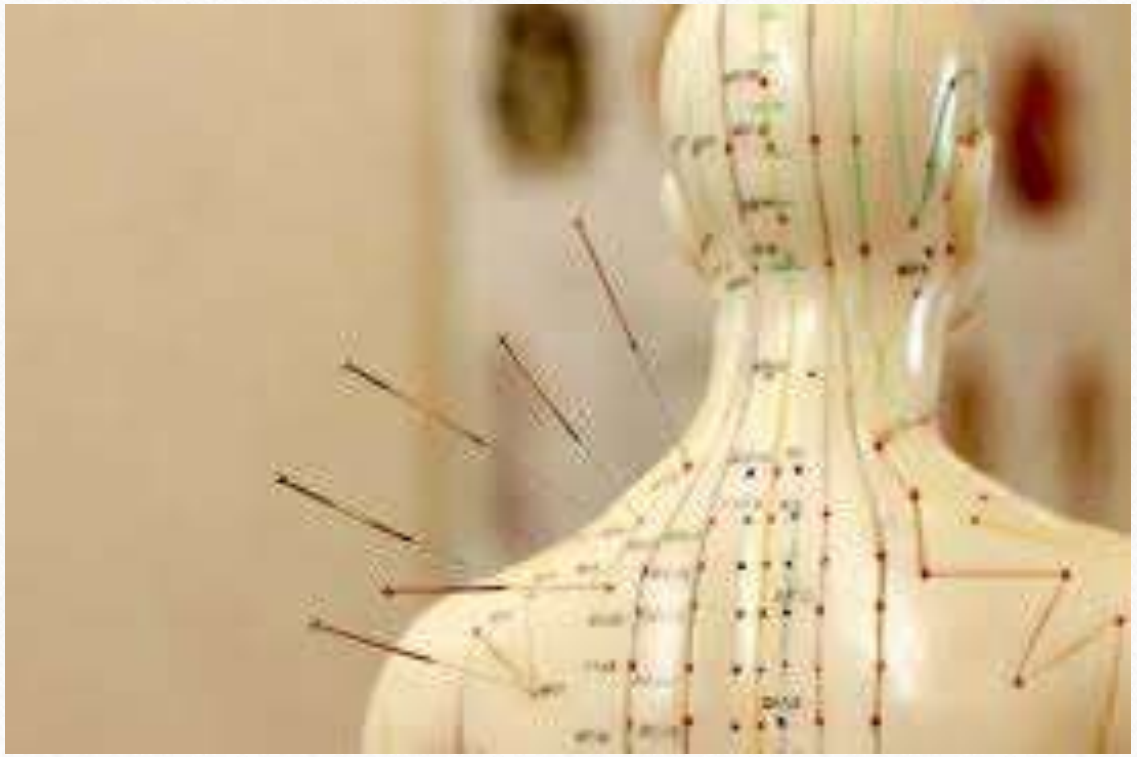
Sports Massage

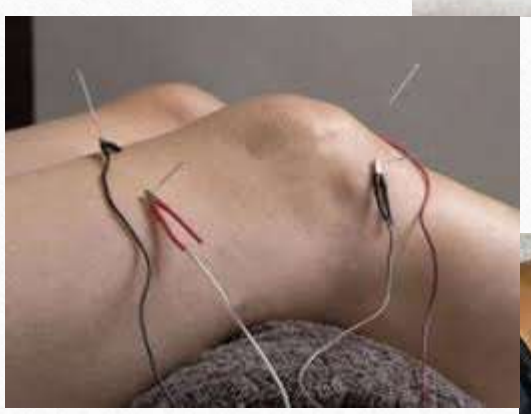
- Provides evidence for
  - increased muscle and skin temperatures
  - leads to a relaxation response as demonstrated by a reduction in resting heart rates, blood pressure
  - decrease in excitability of the motor-neuron pool
- **Athletes use massage as both a means of relaxing physically and psychologically.**


TYPES OF MASSAGE
Thai massage
stone massage
manual massage
honey massage
oil massage
cup massage
massage with herbal bags
acupuncture massage

Acupuncture / Acupressure

- Acupressure is often performed as an adjunct to sports massage
- Requires more extensive qualifications
- Both acupressure and acupuncture focus on applying pressure or stimulus to specific points located on 14 meridians (line patterns) on the body.





Psychological Skills

Debriefing

- Debriefing is one of the most useful ways to evaluate performance and provide emotional and psychological recovery post training or post match.
- A successful debriefing approach helps both the coach and athlete
  - to evaluate performance objectively
  - identify what specific changes are needed
  - set realistic goals for the next training session or match.

Emotional Recovery/Contingency Planning

- In the case of a major setback or traumatic situation or event, additional resources and strategies may assist the athlete to manage this process and help them to take to first steps in "coming to terms" with the situation.
- It is important for coaches to identify in advance the strategy of strategies that they will use if such situations arise.
- **Contingency planning is an important aspect of preparation for handling emotionally traumatic events.**

- Some of the simplest distracters to use during a tournament or competition are mood-lifting activities.
  - Watching an amusing video
  - Comedy show on television
  - Reading adventure novel
  - Visiting to a fun park, zoo or light entertainment center.
- **For athletes in extended competitions away from home, and especially overseas, planning such activities as part of the tour is essential.**

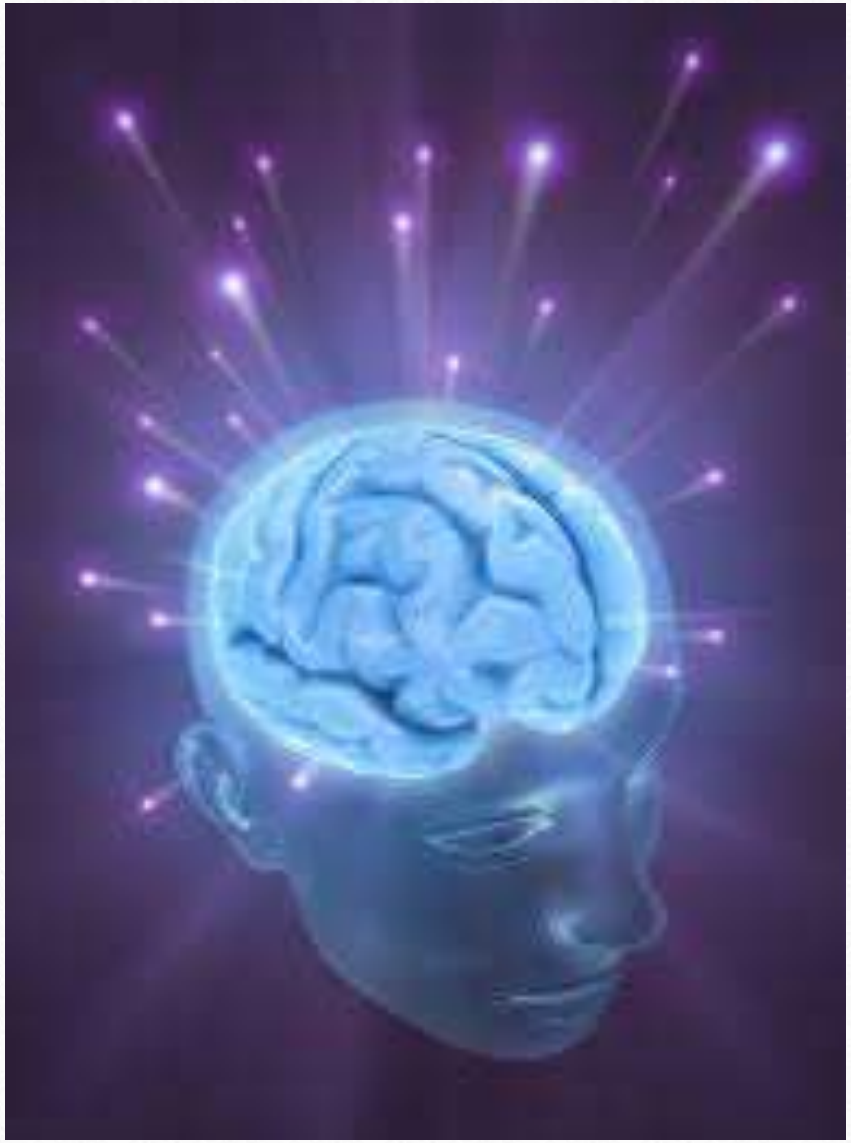
Mental Toughness Training

- Recognition of the complex interaction and strong relationship between physical and emotional states is important for recovery training.
- This is evident when muscle relaxation is observed in conjunction with lowered heart rates and blood pressures and improved mood states.
- Skills associated with developing mental toughness or emotional control and relaxation strategies, are important strategies for athletes to use.
- Positive self-talk and developing positive body language are some of the effective skills.
- These techniques can be used within training and match situations as well as afterwards and coupled with biofeedback techniques for greater effect.

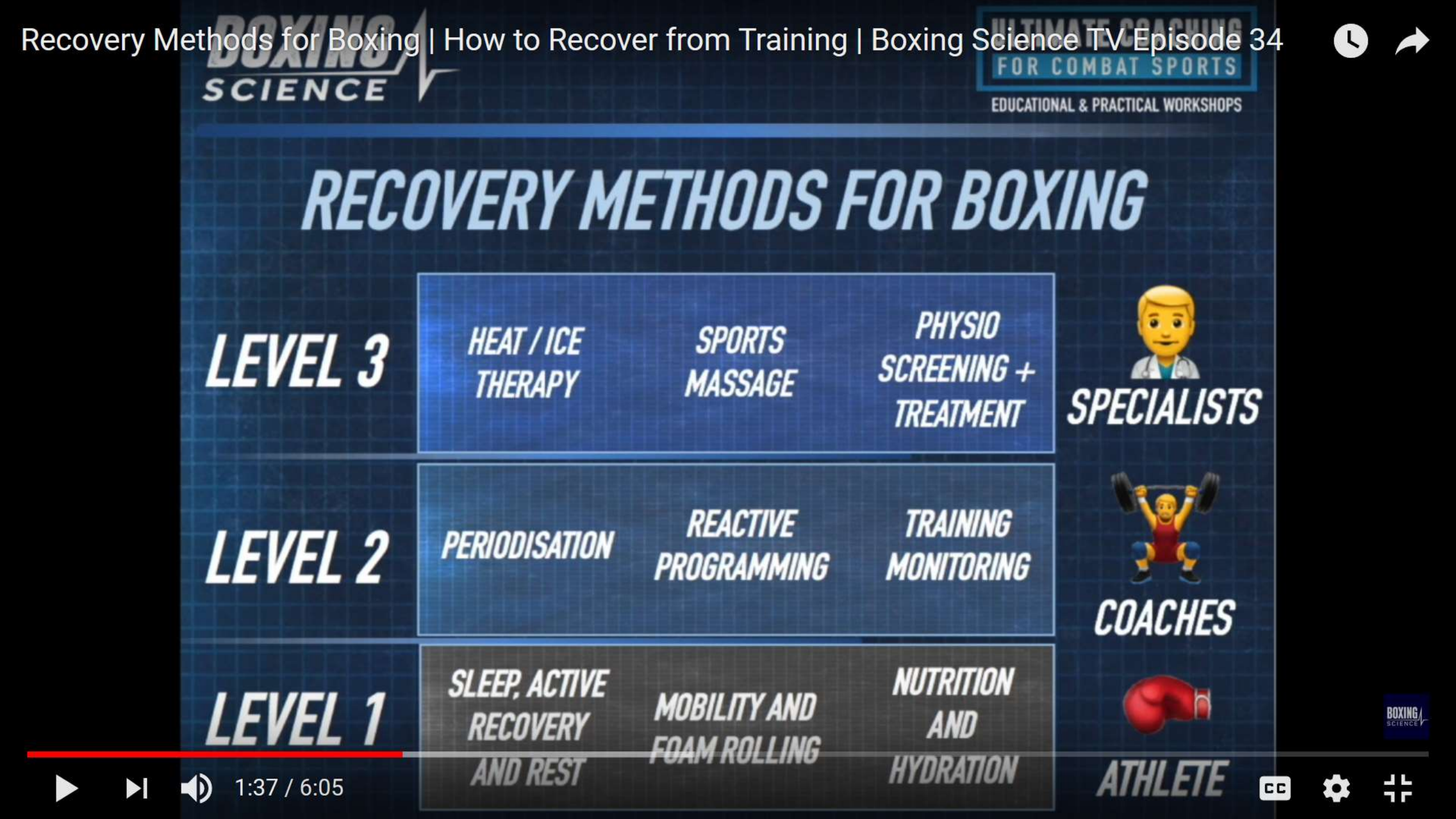
Relaxation Techniques

- Meditation
- Jacobson's Progressive Neuro-muscular Relaxation
- Visualization
- Breathing exercises
- Music

An athlete needs to practice only one or two techniques on a regular basis for these to become effective tools to use to aid recovery.



Recovery Methods for Boxing | How to Recover from Training | Boxing Science TV Episode 34



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