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**THE 2ND INTERNATIONAL CONFERENCE OF EDUCATION AND SCIENCE
THEME: NEW NORMAL ON EDUCATION**

UNIVERSITAS KRISTEN INDONESIA, JAKARTA-INDONESIA
9TH-10TH DECEMBER 2020



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BIOMOTOR ABILITIES OF PROFESSIONAL BOXERS DURING COVID-19



MAKSIMUS BISA



The 2nd International Conference of Education and Science

Fakultas Keguruan dan Ilmu Pendidikan

Universitas Kristen Indonesia

Jakarta: December 9-10, 2020

OUTLINE

Boxing:
Popular contact sport

- ❖ Covid-19
- ❖ Physical Distancing
- ❖ Social Distancing

- ❖ Environment changes
- ❖ There are no matches

willingness and enthusiasm
to practice the trainers to
decrease

Problem

Biomotor Abilities ↓
Anxiety & Stress ↑

Sports science & technology

Solution

**Autogenic &
Audiovisual Self-
Training**

INTRODUCTION

Sports industry

Technological innovations

- ✓ Global competitiveness
- ✓ Gaming experiences
- ✓ Consumers
- ✓ Spectators

How to develop a comprehensive strategy regarding innovation management, especially in response to the changing environmental conditions imposed by Covid-19 to provide adequate services through a more realistic approach (Vanessa Ratten, 2020: 1)

- ❖ Open skill
- ❖ Interceptive sport
- ❖ Environment changes
- **Adapt to new situations at every moment**
(Russo & Ottoboni 2019: 60)

- **Biomotor abilities**
- **Psychological factor**
- **Max. peak performance**

METHOD

Qualitative description
with a literature study

Which analyzes various theories put forward by experts regarding the factors of strength, maximum strength, explosive muscle power, and anxiety that affect the peak performance of professional boxers during the Covid-19 pandemic to achieve maximum performance supported by empirical facts in the field

DISKUSI & PEMBAHASAN

McCrary et al in Bisa (2020: 727)

Amateur Boxing

- ❖ Motivation to compete
- ❖ Different rules
- ❖ Equipment

Professional Boxing

- ❖ Minor exposure to injury
- ❖ Short fight
- ❖ Little boxing experience
- ❖ Bigger and heavy boxing gloves
- ❖ Small reward for a shot that injures an opponent
- ❖ Short career
- ❖ The pay is small
- ❖ KO is a rare event (the 2001 world amateur championship was only 6 KO of a total of 366 fights)

Some studies show that a single hit from a professional heavyweight boxing champion can deliver impact forces of up to 6,320 N (0.63 tonnes)

- ❖ Greater exposure to injury
- ❖ Longer fights
- ❖ More boxing experience
- ❖ Smaller and lighter boxing gloves
- ❖ More score reward for a shot that injures an opponent
- ❖ Longer career after an amateur career
- ❖ The pay is big
- ❖ KO often

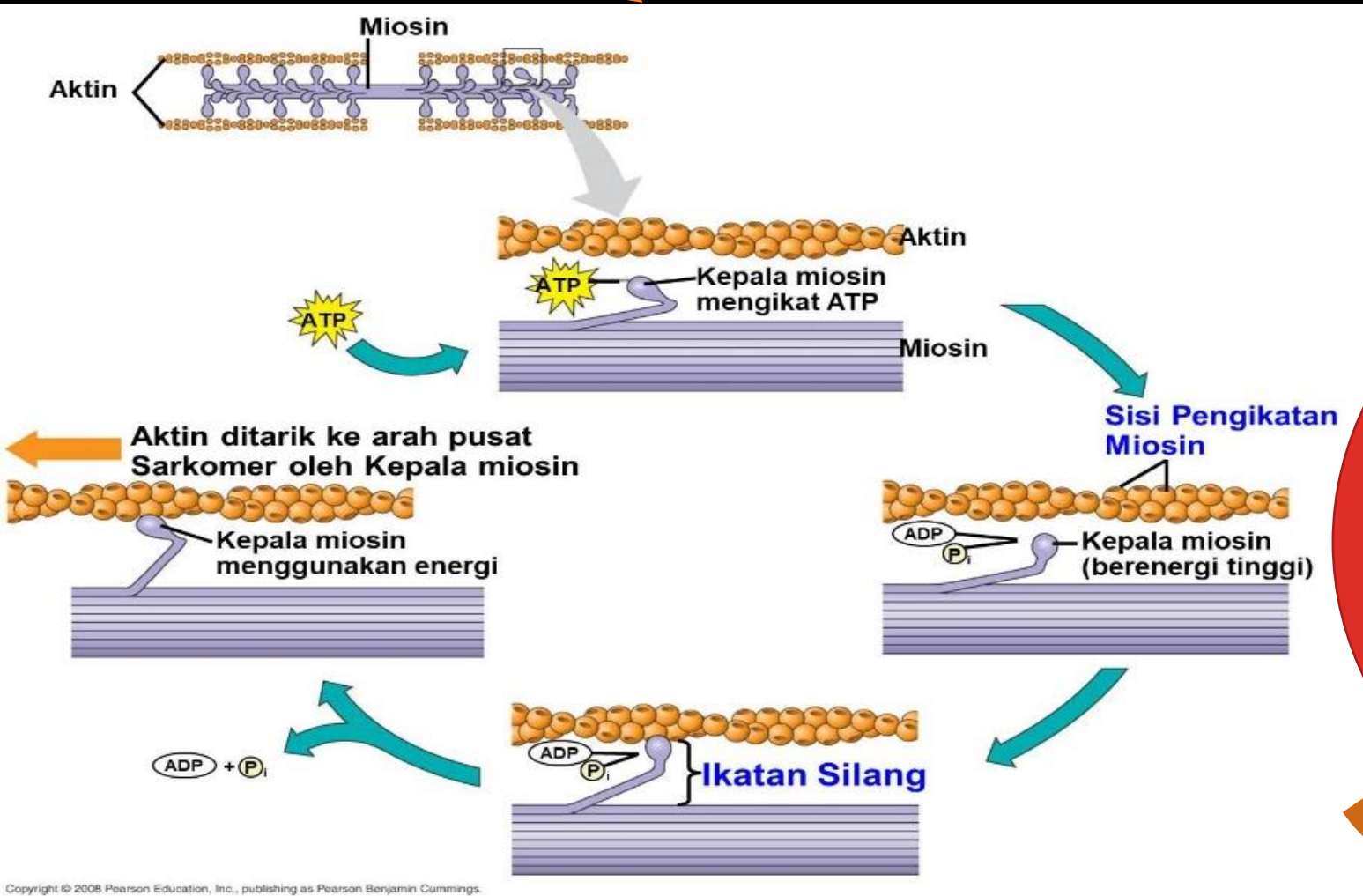
STRENGTH & MAXIMUM STRENGTH

Sliding Filament Theory

Stimulus – Response

Physiological Characteristics of muscles:

1. Contractility
2. Extensibility
3. Conductivity
4. Elasticity
5. Plasticity



Bompa & Buzzichelli (2019: 233, 261)

Strength:

Strength is defined as the ability of the neuromuscular system to generate strength against external resistance

Maximum strength (7 concepts):

1. Motor units recruited
2. Speed of motor unit coding
3. Motor unit synchronization
4. Stretch-shortening cycle
5. Degree of neuromuscular inhibition
6. Type of muscle fibres
7. degree of muscle hypertrophy

- ❖ Magill & Anderson (2017: 80): one motor unit can innervate 700 muscle fibres
- ❖ 1500-2000 muscle fibres produce coarse and robust movements
- ❖ The more motor units recruited, the more muscular the muscle contraction
- ❖ The resulting movement is more muscular (Kisner & Colby, 2012: 159)

Strength Training Theory

Bodybuilding
(Binaraga)

Exercises related to increasing muscle size, carried out six to 12 repetitions until fatigue arises

High Intensity
Training (HIT)

High training load throughout the year, strength can be achieved in 20 to 30 minutes and is resistant to high volume, long-lasting and continuous strength training

Olimpic Weight
Lifting

Significant effect at the beginning of strength training

*Power Training
Throughout the Year*

Some coaches believe that strength training should be done from the first day of training to the main championship

*Periodization
of Strength*

Strength training should be based on the specific physiological requirements of the sport and should result in the development of power and muscle endurance

The physiological adaptations
Strength training

Ruddock et al., (2016: 81):

Adaptation of physiological characteristics is needed by a professional boxer to be successful in performance. Strength and specific training are done between 8 -12 weeks before competing

Neurological adaptations:

- ❖ Changes in motor unit recruitment patterns
 - ❖ Motor unit synchronization
 - ❖ Motor unit burn rate
 - ❖ Reflex activation

Two categories to adaptation can be influenced by many factors such as training status, type of exercise used in the training program, genetic, age, and sex (Bompa & Buzzichelli, 2019: 235)

Morphological adaptations:

- ❖ Changes in overall muscle size
 - ❖ Muscle hypertrophy
- ❖ Transitional muscle fibre types
- ❖ Changes in muscle architecture

MUSCLE EXPLOSIVE POWER

Bompa & Buzzichelli (2015: 25):

Power is the ability to carry out explosive movements in the shortest possible time, which is the result of the integration of maximum strength and speed

Boxers in making strong movements or punches need the right muscle explosive power

Muscle explosive power is the ability of the muscles to use the maximum force exerted in the shortest possible time

Intramuscular factors:

- ✓ Cross-sectional area
- ✓ Muscle structure
 - ✓ Available energy
- ✓ Muscle fibre type

Neural factors:

- ✓ Increased agonist activity
- ✓ Neural contribution
- ✓ Premovement silence
- ✓ Motor unit recruitment
- ✓ Selective activation of agonist's
- ✓ Coordination of movement patterns and skills

Psychological Theory

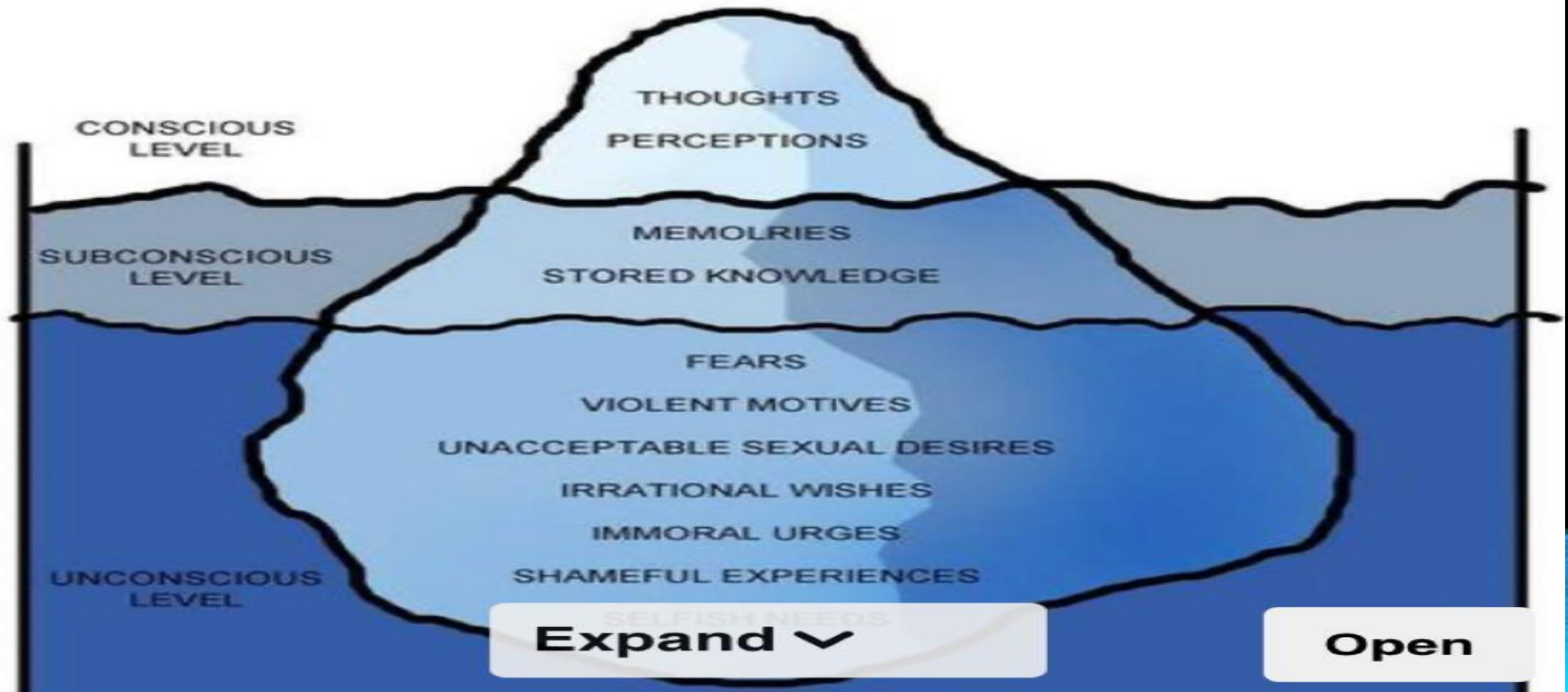
❖ Anxiety
❖ Autogenic/
Mental Training/
Self Suggestion

- Sigmund Freud
- Albert Einstein
- Electromagnetic
- Abraham Maslow

**Your
subconscious
mind is 30,000
times more
powerful than
your conscious
mind.**

Your subconscious mind is

Freud's View of the Human Mind: The Mental Iceberg



Freud Psychology



ANXIETY

Anxiety can arise at any time; one of the causes is excessive and prolonged tension

Somatic anxiety:

- ❖ Difficulty concentrating
- ❖ Complaining quickly
- ❖ Worry easily

Cognitive anxiety:

- ❖ Trembling
- ❖ Excessive sweating
- ❖ Rapid breathing
- ❖ Increased pulse inappropriately
- ❖ Feeling nauseous, and diarrhoea

Research by Munshi et al., (2020: 3):

Stress could recruit the immune system to alter the function of brain regions critical to emotion. These changes explain the comorbidity of various inflammatory conditions associated with chronic stress and the psychological disorders triggered by chronic stress

- **Psychological support**
- **Mental training**

AUDIOVISUAL SELF-TRAINING

Covid-19

- ✓ Physical distancing
- ✓ Social distancing

❖ Stress, anxiety ↑
❖ Biomotor abilities ↓

- Relaxing through stretching
- Listening to music
- Visualizing by showing (watching the best videos)
- Motivating yourself (self-talk) by activating the subconscious optimistically and optimally. Continuously

CONCLUSION

Physical exercise independently

- ❖ Maintain the physiological muscles & joints
- ❖ Maintain & increase muscle strength & motor abilities

Gym, in the wild (on the beach, in mountainous areas) or with audiovisual assistance

During the Covid-19 pandemic

Excessive anxiety and stress

It can reduce the body's immune system

- ❖ Mental /autogenic training
- ❖ Role of coaches, management, and organizations is vital to support



**THANKS
GOD BLESS**