

**PHYSICAL PREPARATION
FITNESS & TESTING OF
REFEREES**

**Prof. Hans Holdhaus
IHF – MEDICAL COMMISSION**

IMSB - Austria



INSTITUT
FOR
SPORTSMEDICINE
& SCIENCE

OLYMPIC
CENTER

1982



IMSB - Austria



TASK

**SCIENTIFIC
SUPPORT
TO
SPORTS**

IMSB - Austria



**SCIENTIFIC
SUPPORT
???**

MEDICINE

SPORTSCIENCE

NUTRITION

REGENERATION

IMSB - Austria



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IMSB - Austria



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LOS ANGELES
SEOUL
BARCELONA
LILLEHAMMER
ATLANTA
NAGANO
SYDNEY
SALT LAKE CITY
ATHEN
PEKING
VANCOUVER

IHF - MC

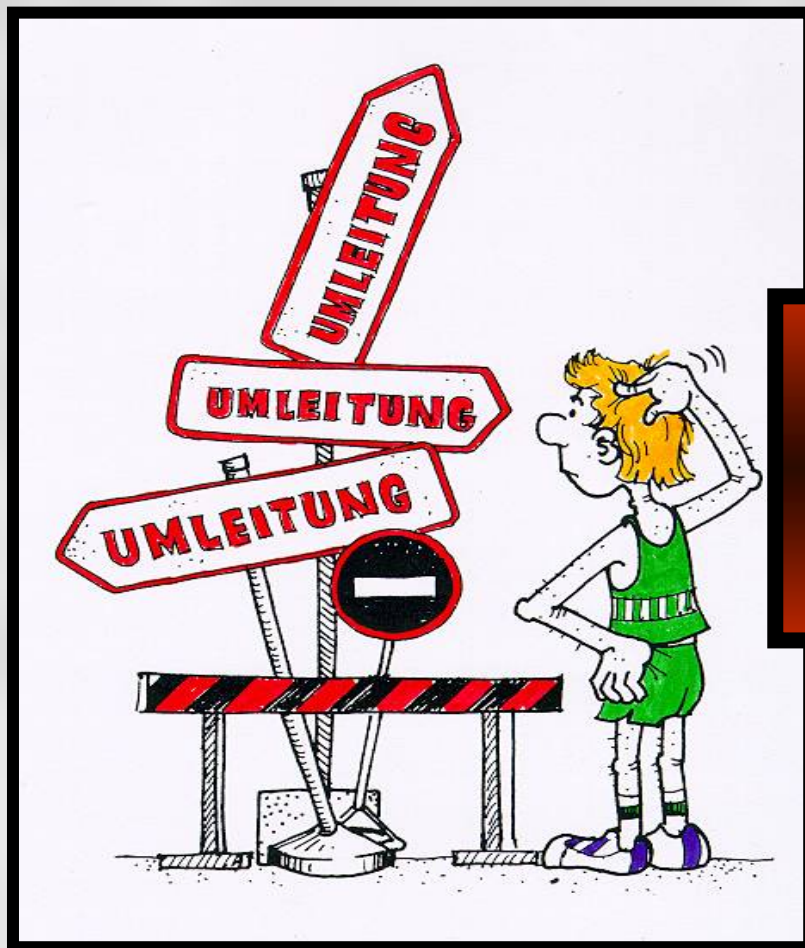


**MEMBER
MEDICAL COMMISSION
since 1992**

**HEAD
IHF – ANTI – DOPING
UNIT
since 2005**



IHF - MC



REFEREE

THE REFEREE

IMSB
Austria

HANDBALL
HAS
CHANGED

FASTER



THE REFEREE

IMSB
Austria

HANDBALL
HAS
CHANGED

DYNAMIC



THE REFEREE

IMSB
Austria

HANDBALL
HAS
CHANGED

ATTRACTIVE



THE REFEREE

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HANDBALL
HAS
CHANGED

RISKY



THE REFEREE

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HANDBALL
HAS
CHANGED

VIOLENT



THE REFEREE



**GAME
CHANGED**

**REFEREES
HAVE
TO
CHANGE
TOO**

THE REFEREE

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**CONTROL THE
GAME**

**MAKE
DECISIONS**

**PART OF THE
GAME**

THE REFEREE



**REFEREE
IS
A
KEY
PLAYER
IN
THE
GAME**

THE REFEREE



NECESSITY & DEMAND

REFEREES
MUST
REFLEX & ADAPT

THE REFEREE



PROJECT

„THE *NEW* REFEREE“

GLOBAL REFEREE TRAINING PROGRAMME

THE REFEREE



PROJECT

„THE *NEW* REFEREE“

GLOBAL REFEREE TRAINING PROGRAMME

? REALISATION ?

THE REFEREE



PROJECT

„THE *NEW* REFEREE“

EUROPEAN REFEREE TRAINING PROGRAMME

THE REFEREE

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KNOWLEDGE

TRAINING



THE REFEREE



„TRAINING“

???????

THE REFEREE



WHAT ?

WHEN ?

HOW ?

THE REFEREE



**SUCCESSFUL
TRAINING**

PROCESS

THE REFEREE

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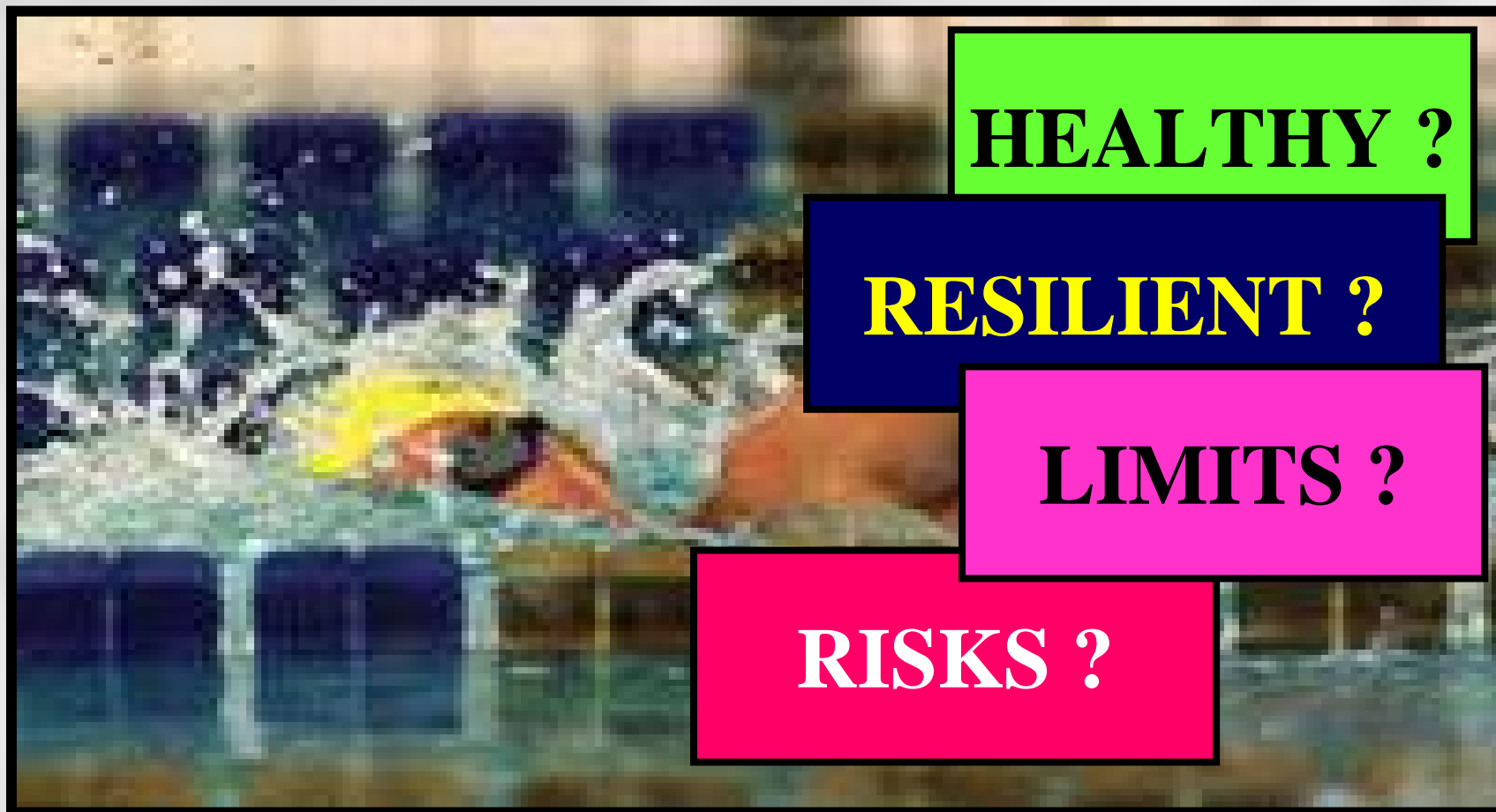
THE REFEREE



BASIC SPORTS MEDICAL EXAMINATION

INTERNAL STATUS
ORTHOPAEDIC STATUS
LAB (Blood, Urin)

THE REFEREE



THE REFEREE



ERGOMETRY

VITA
max

ECG

THE REFEREE



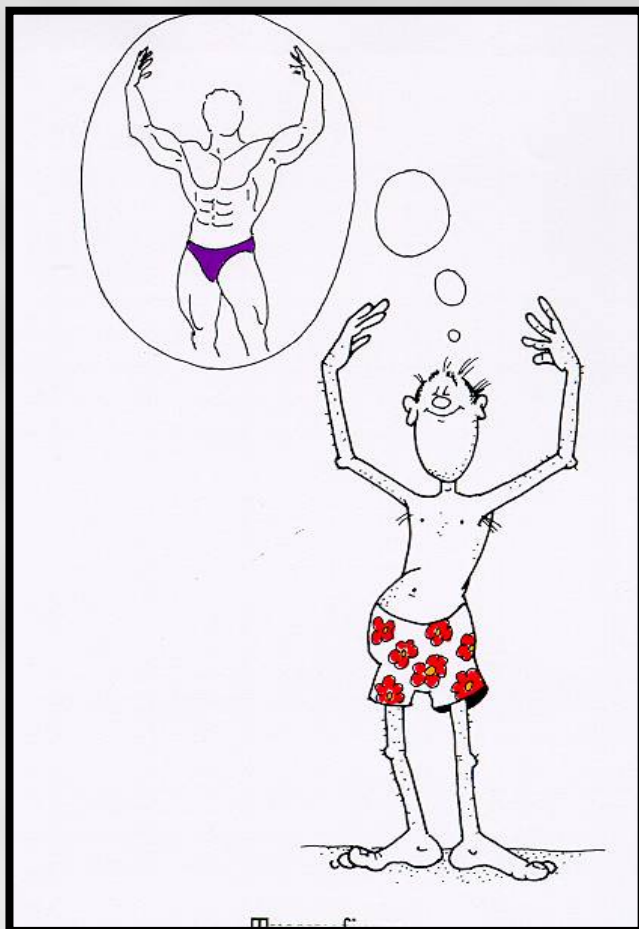
ERGOMETRY



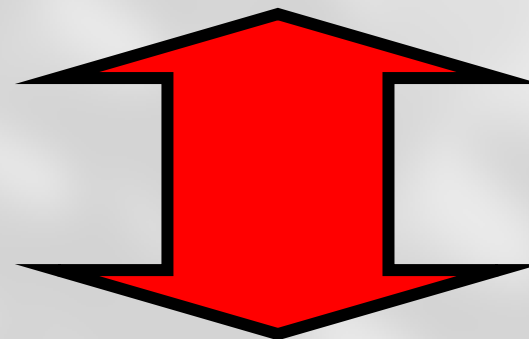
**PERFORMANCE ?
RESILIENCE ?
REGULATION ?**

THE REFEREE

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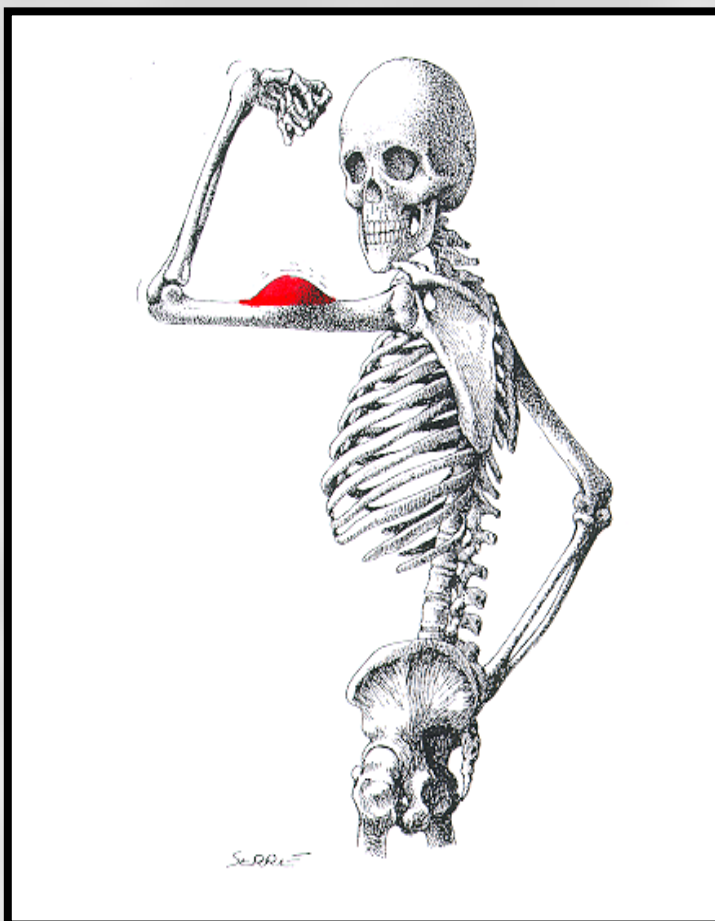


BODY HEIGHT



BODY WEIGHT

THE REFEREE



**BODY-
COMPOSITION**

**FAT
SKELETON
MUSCLE**

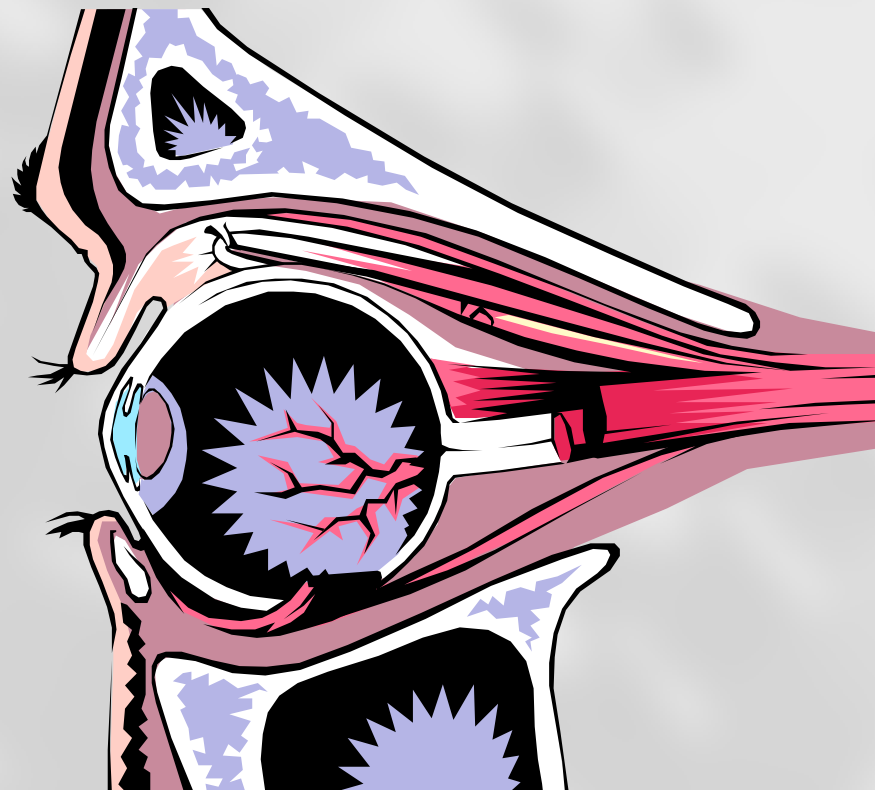
THE REFEREE

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THE REFEREE

TOP VISION PROGRAMM



THE REFEREE

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THE REFEREE

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INDIVIDUAL

TRAINING

EFFECTIVE



THE REFEREE

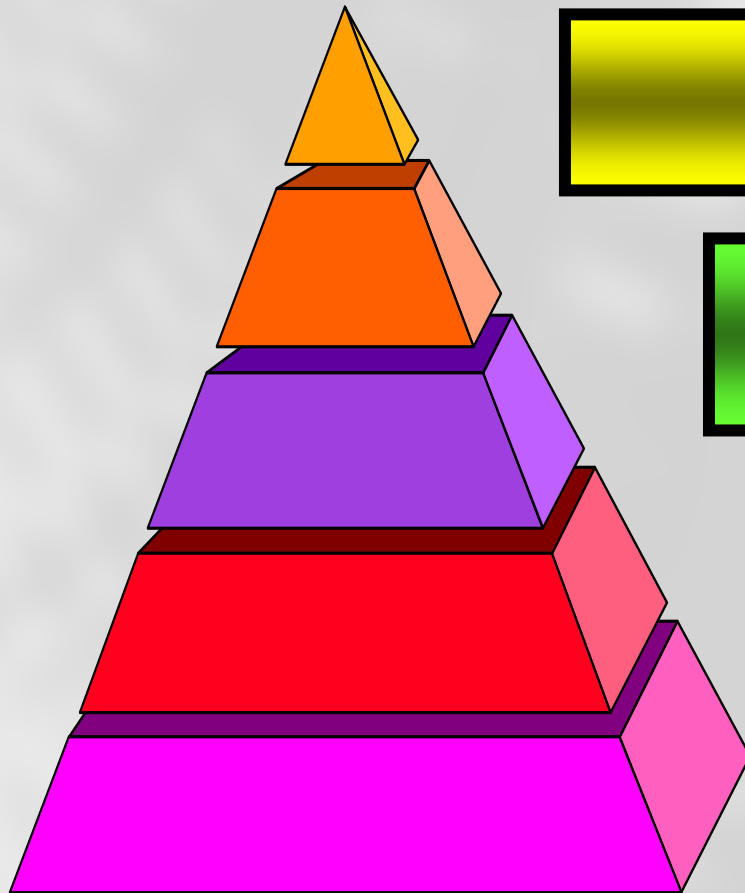
IMSB
Austria

INDIVIDUAL

PERSONAL



THE REFEREE



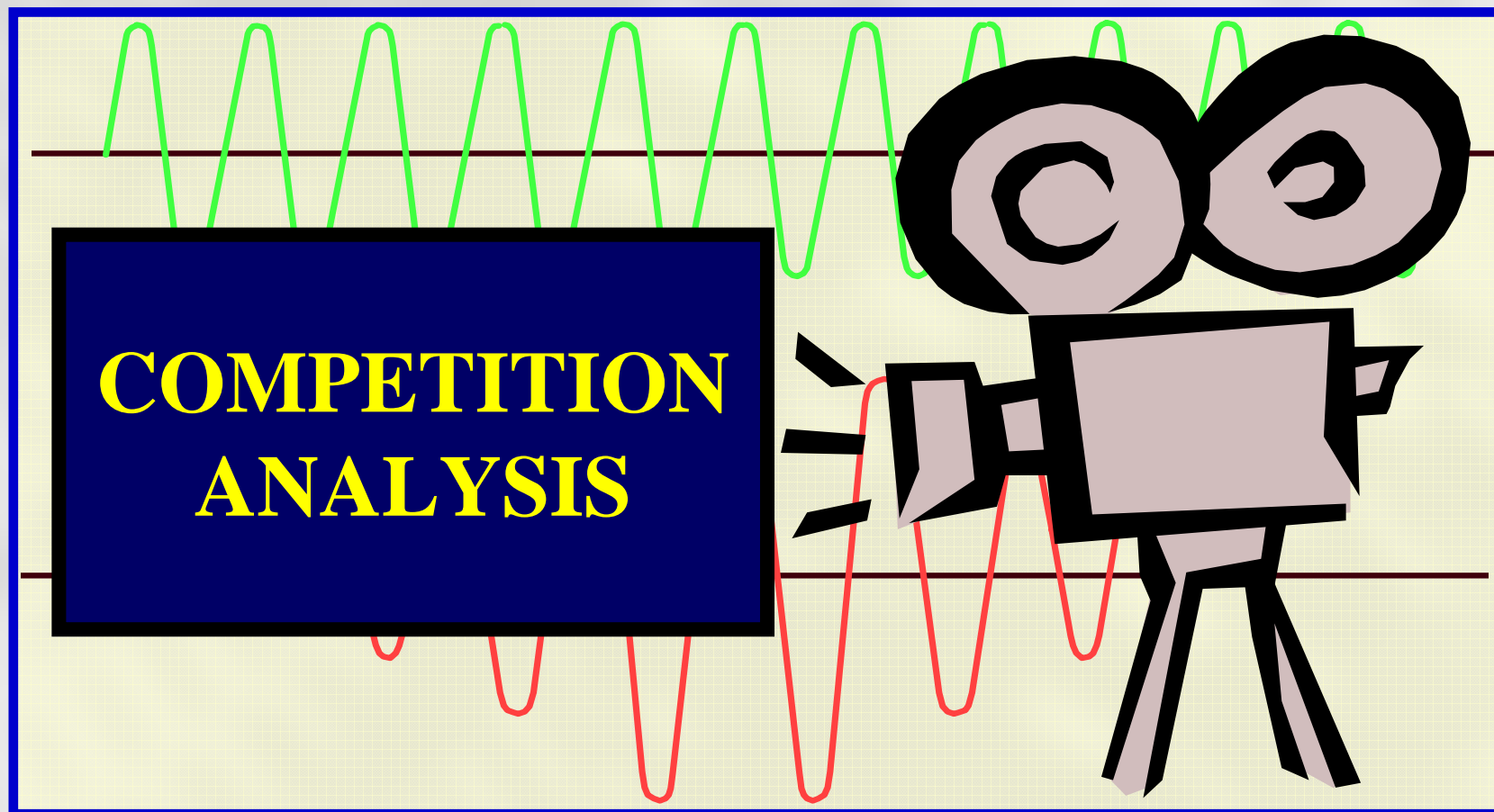
CONTROLLING

TRAINING

DIAGNOSIS

ANALYSIS

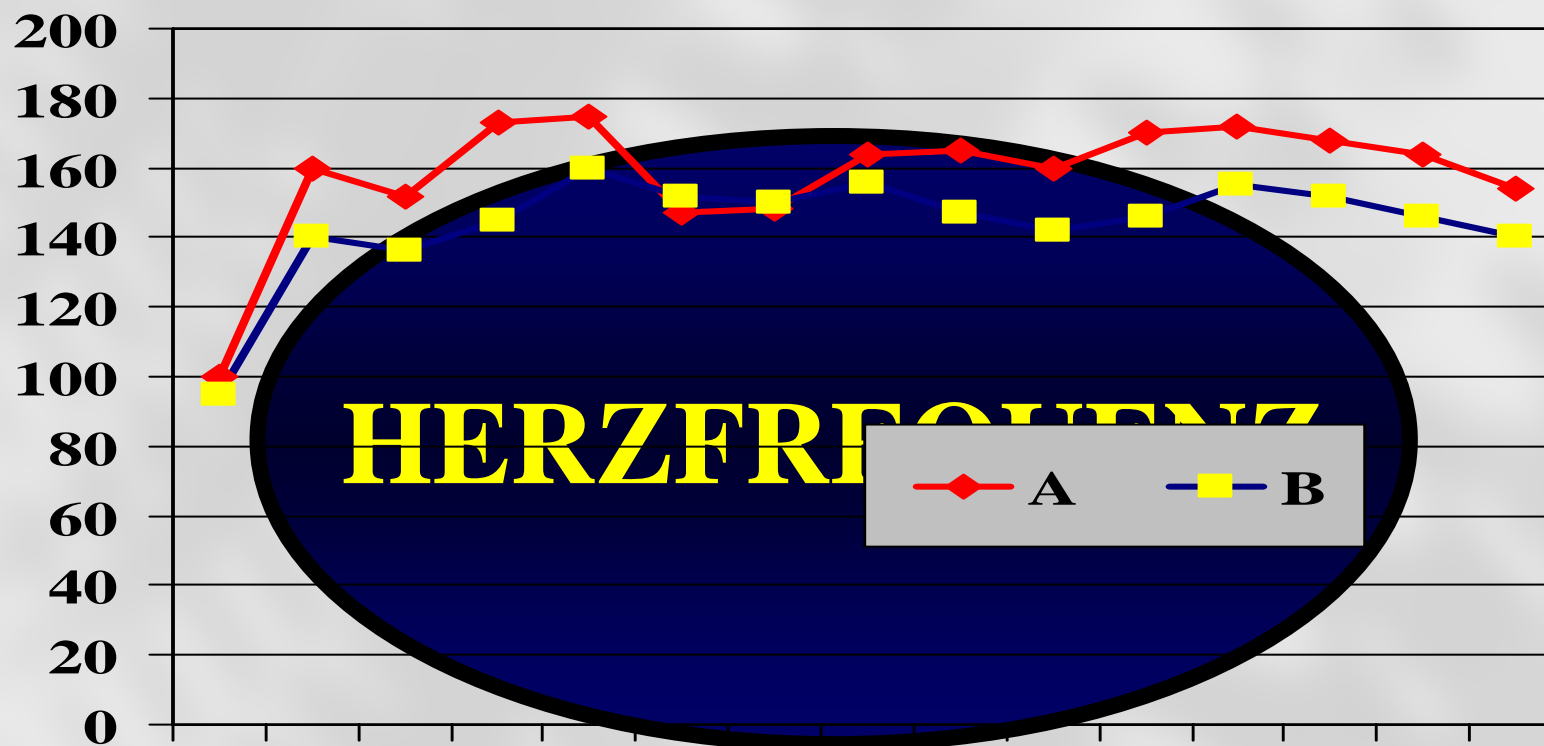
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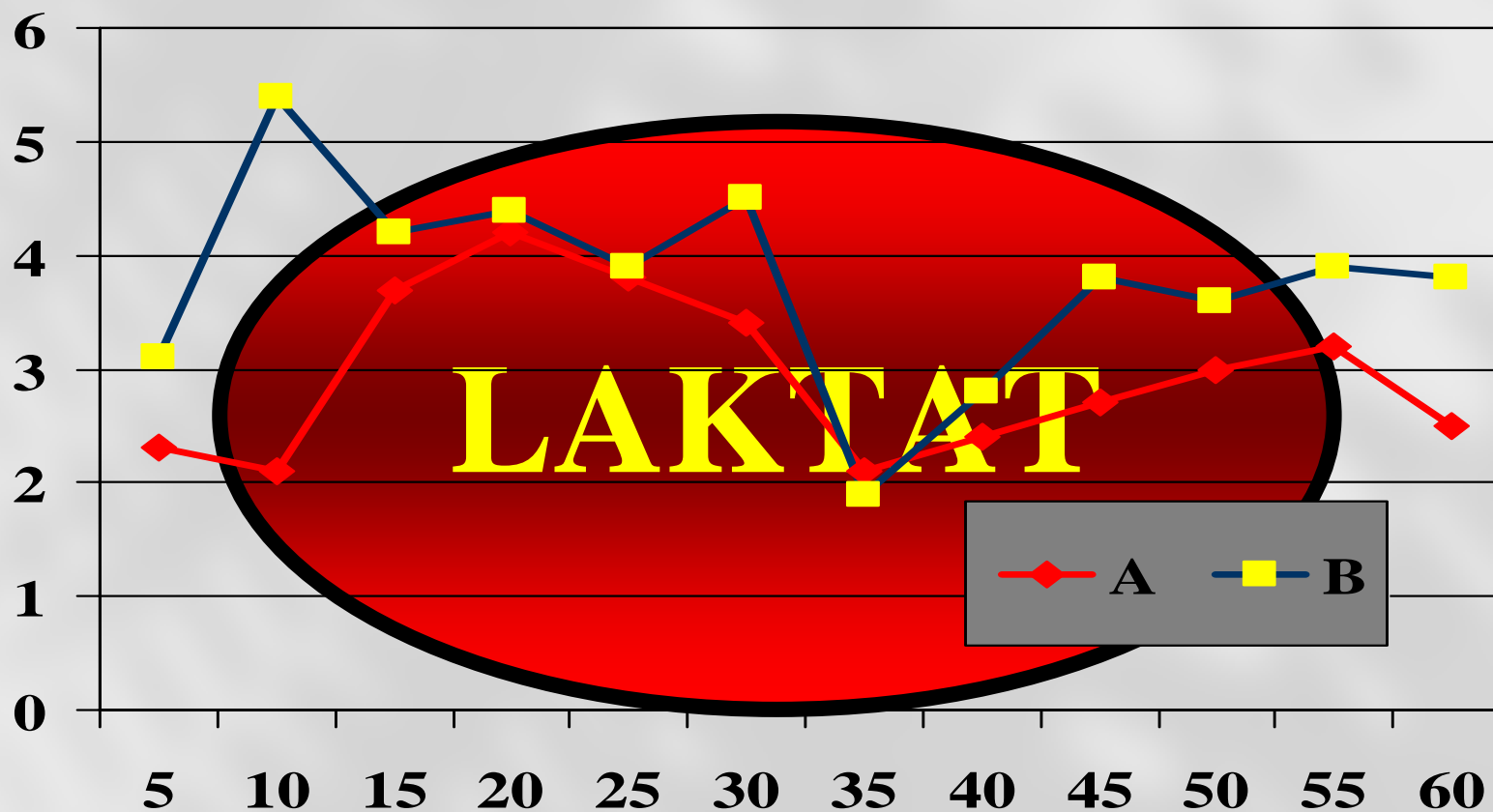
THE REFEREE



THE REFEREE

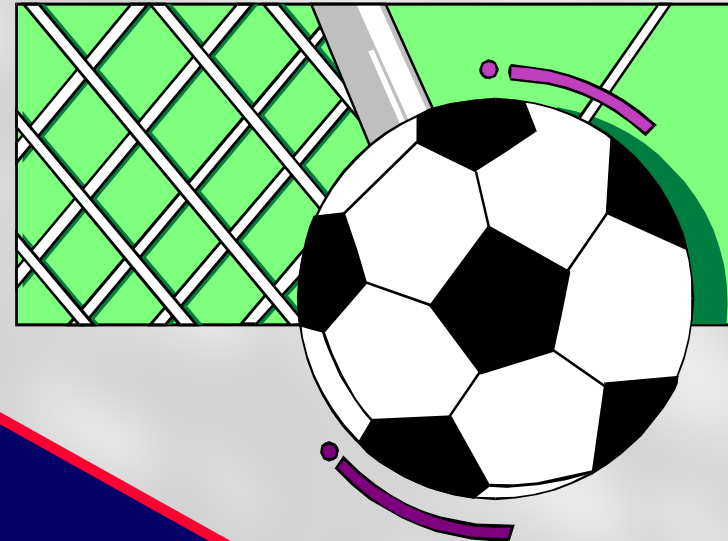


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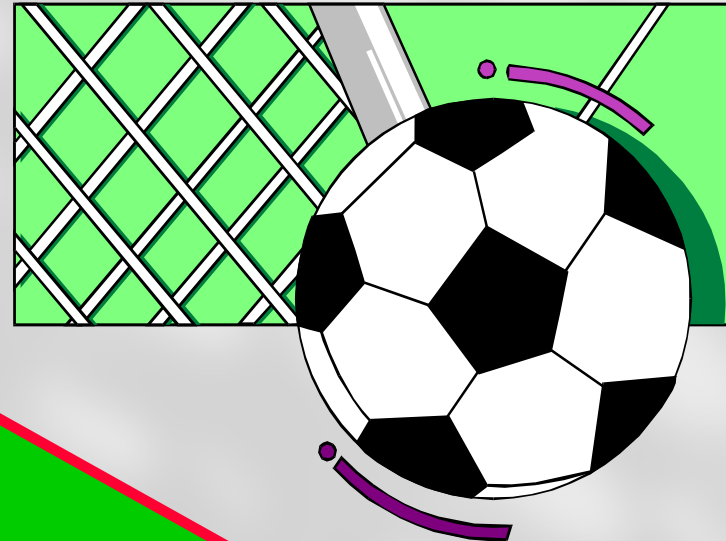
THE REFEREE

SPEED
REACTIVITY
FLEXIBILITY
COORDINATION
SPEED ENDURANCE
AEROBIC ENDURANCE
etc.



THE REFEREE

ATTENTION
SELF CONTROL
SELF CONFIDENCE
CONCENTRATION
STRESS RESISTANCE
etc.



THE REFEREE



HARMONY
PERSONALITY
CONSEQUENCE
PERFORMANCE
CONFLICT MANAGEMENT
etc.

THE REFEREE

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THE REFEREE



TESTS

FIELD

LAB



THE REFEREE



GENERAL TESTS

SEMI SPECIFIC TESTS

SPORT SPECIFIC TESTS

THE REFEREE

SPEED

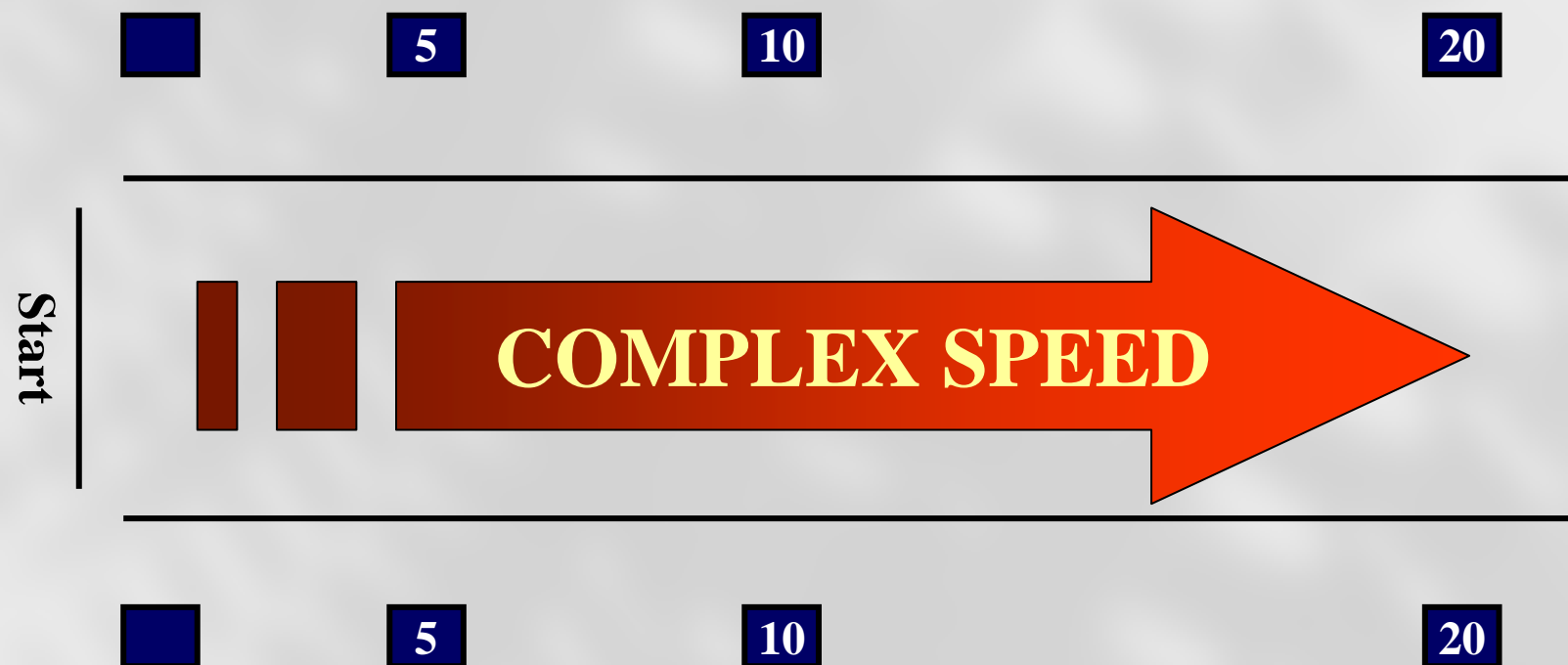
COORDINATION

POWER

ENDURANCE

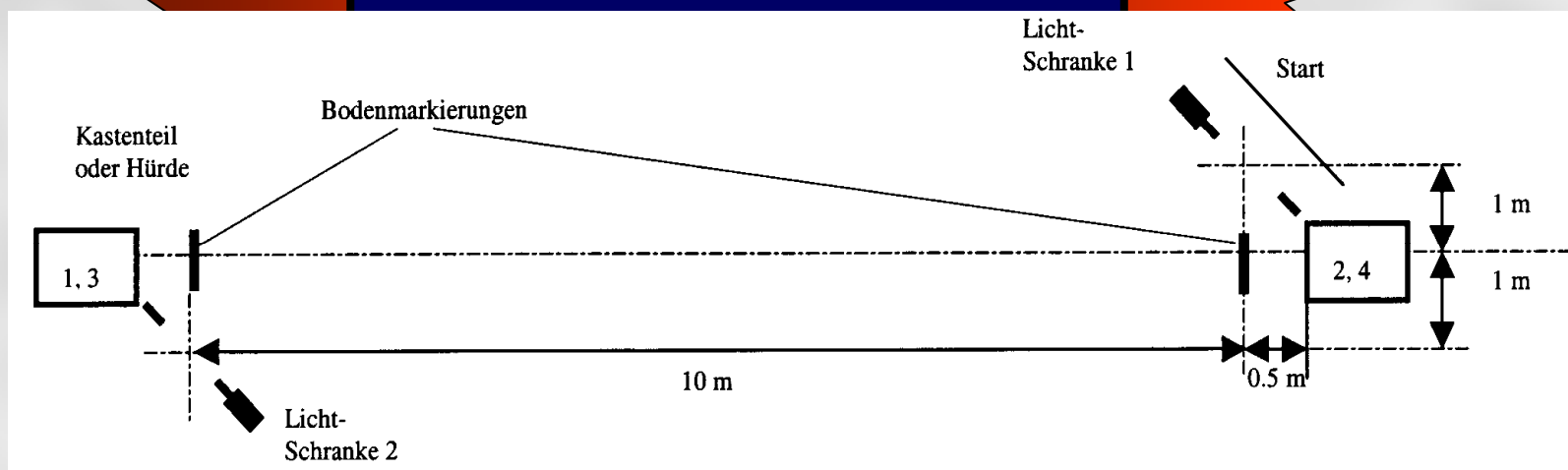
FLEXIBILITY

THE REFEREE



THE REFEREE

AJAX SPRINT



THE REFEREE



COUNTER
MOVE
JUMP

VERTICAL
TAKE-OFF



JUMP HEIGHT

EXPLOSIVE
POWER
JUMP - TECHNIQUE
(JUMP-COORDINATION)

THE REFEREE

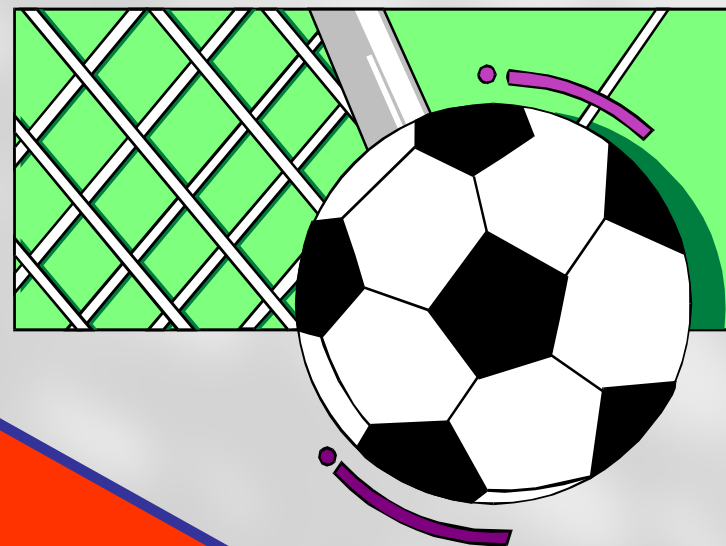


**AGILITY
TESTS**

**REACTION
TESTS**

**COORDINATION
TESTS**

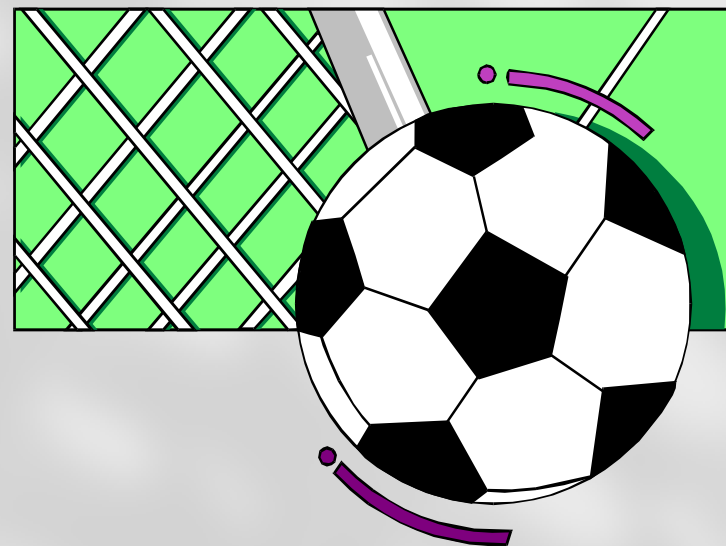
THE REFEREE



ENDURANCE

THE REFEREE

COOPER TEST



12 min RUN



DISTANCE

THE REFEREE



over 3.000

excellent

2.700 – 3.000

good

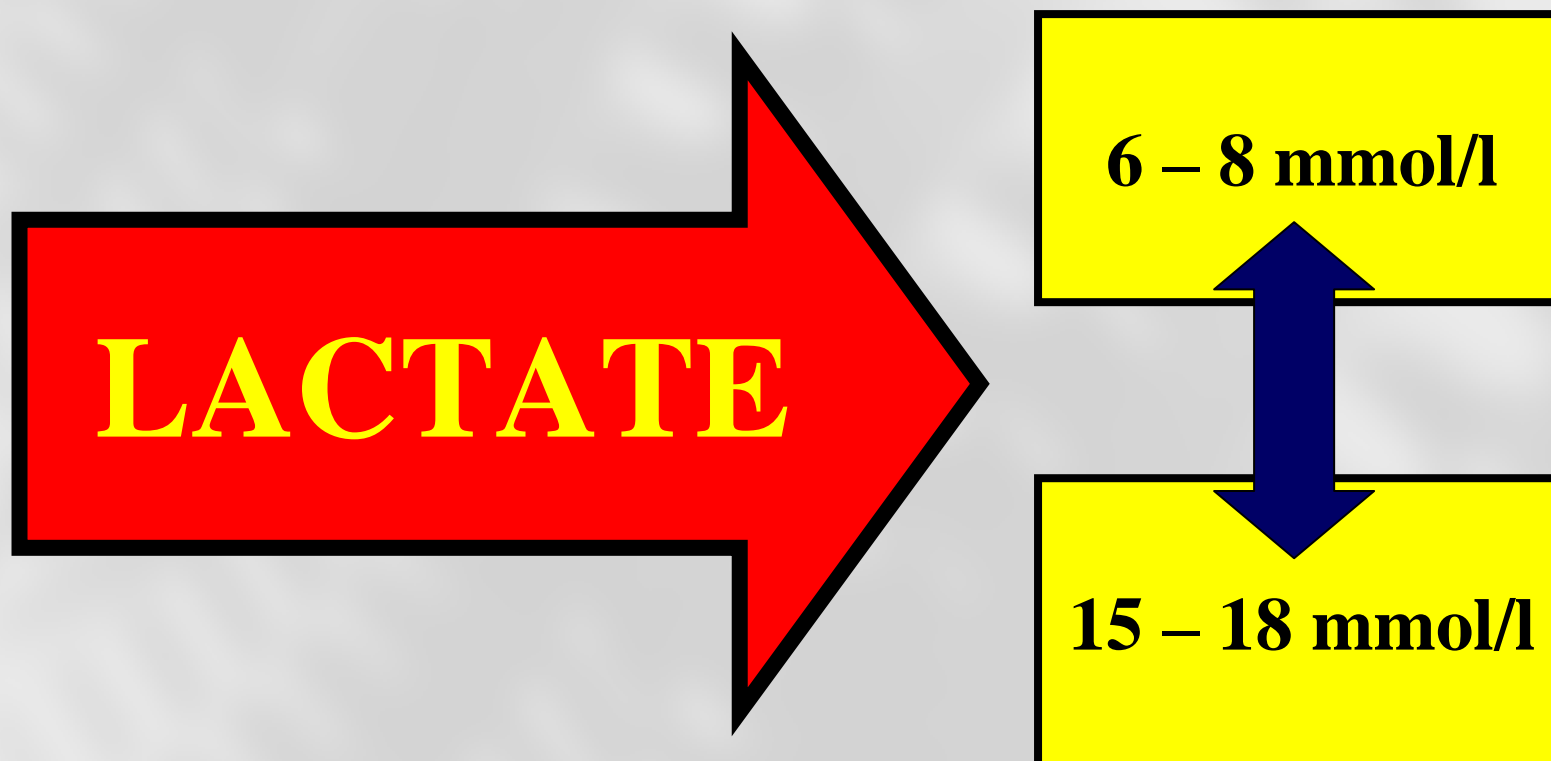
2.400 – 2.700

medium

under 2.400

poor

THE REFEREE

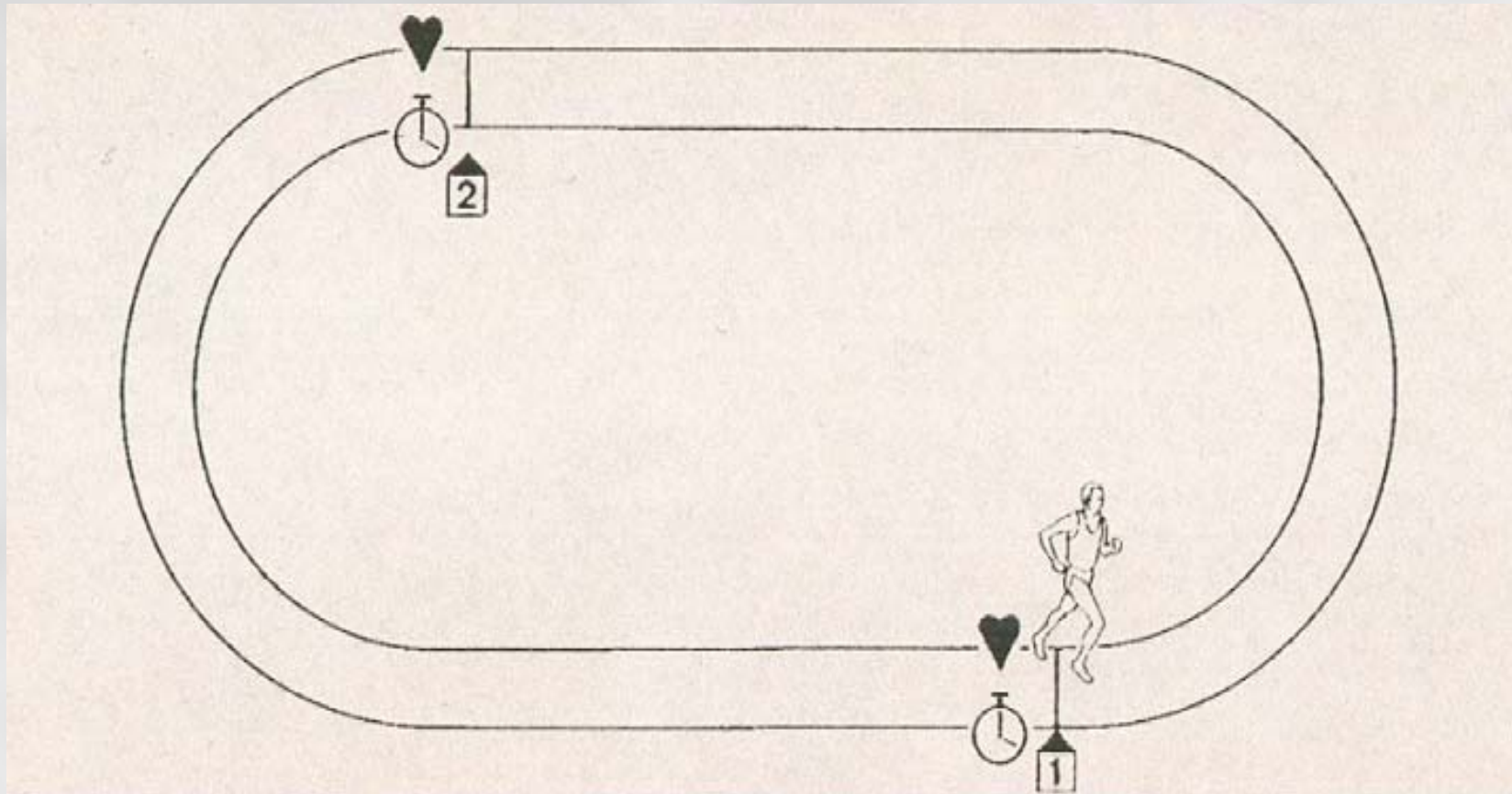


THE REFEREE

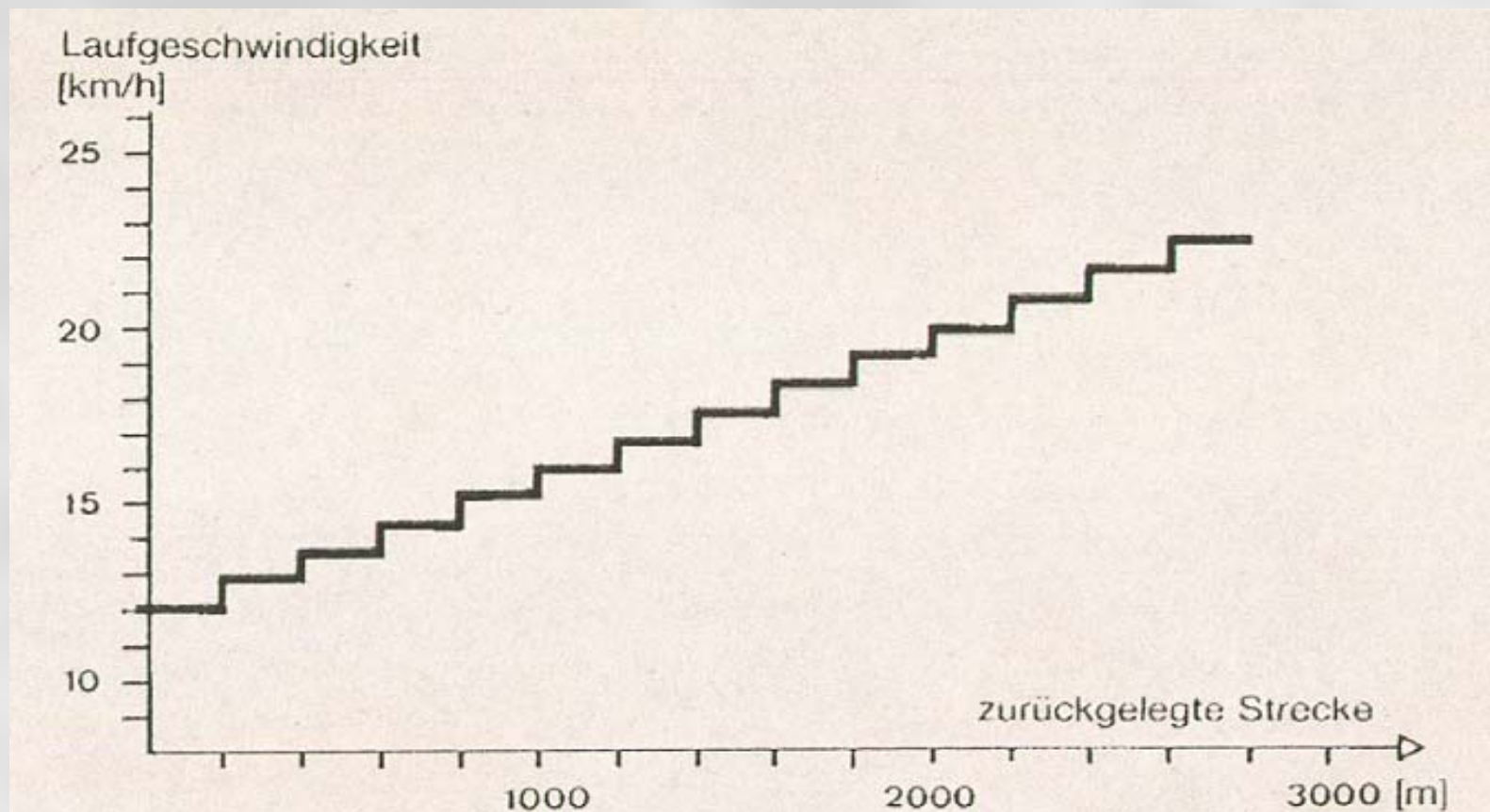


CONCONITEST

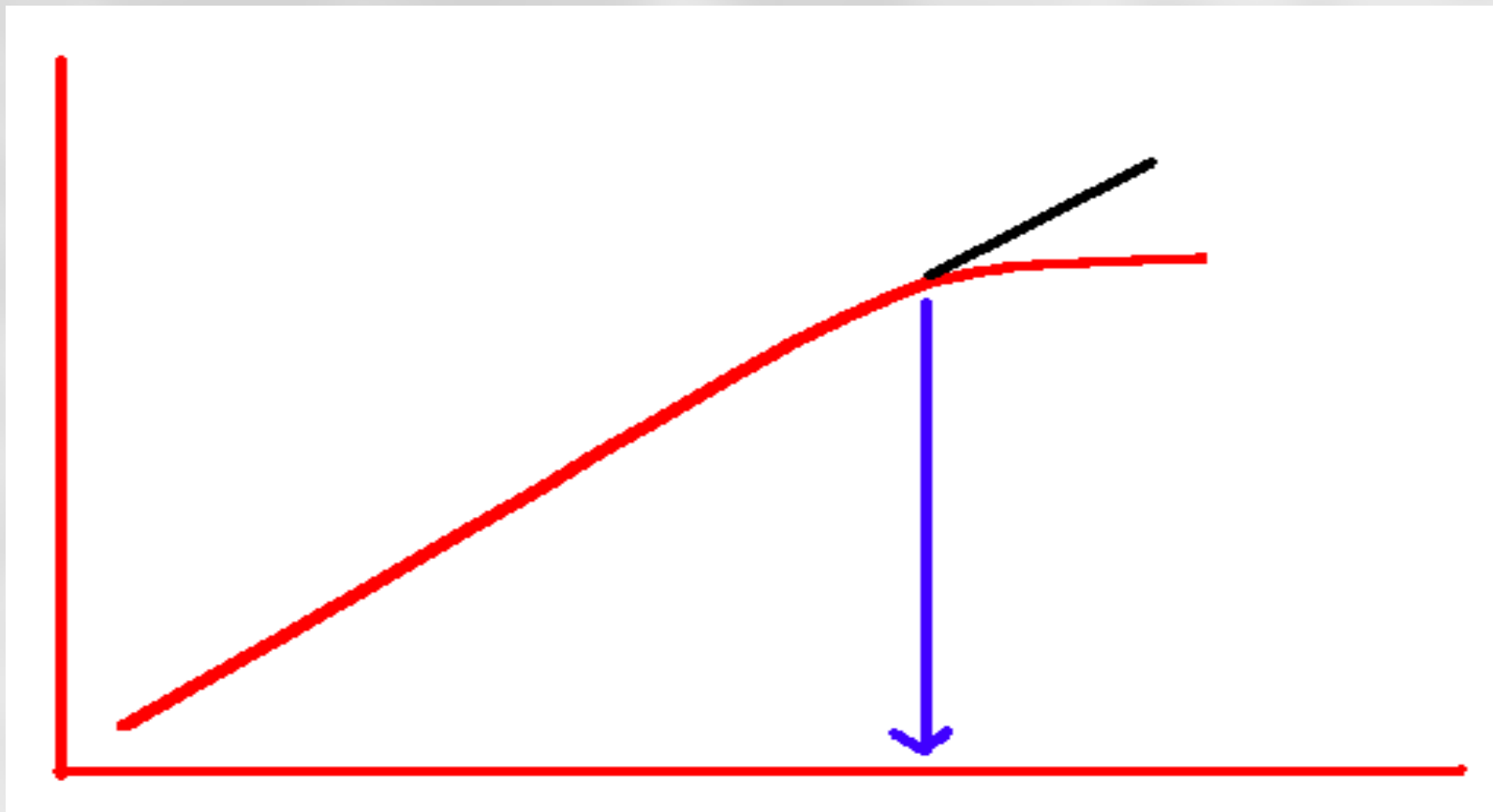
THE REFEREE



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THE REFEREE



THE REFEREE



TRESHHOLD

ANAEROBIC

AEROBIC

THE REFEREE



PHOSPHATE

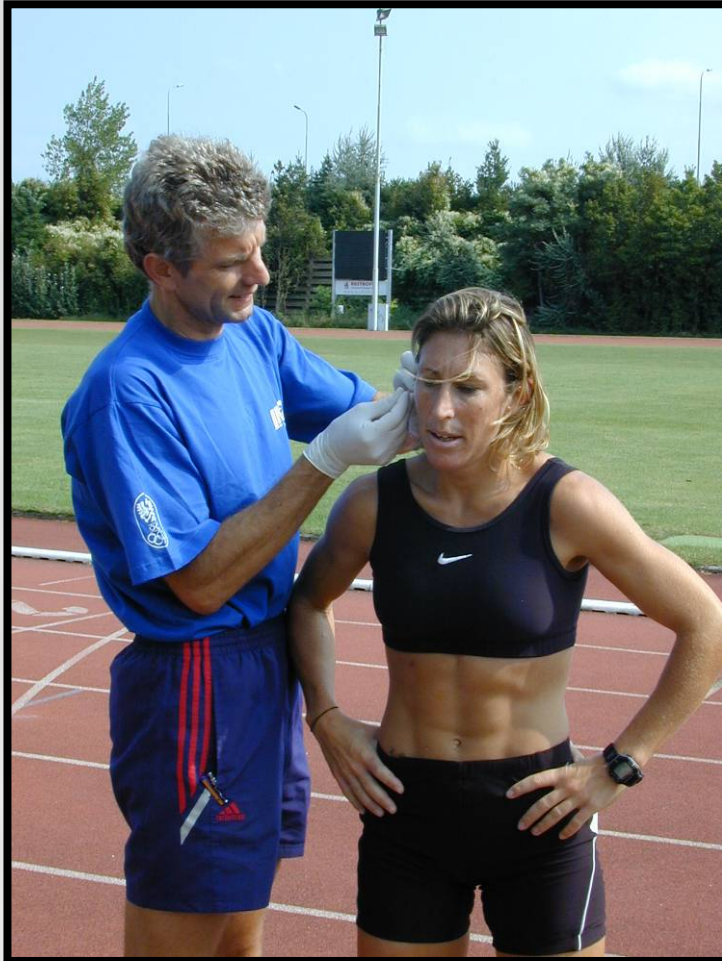
ANAEROBIC GLYKOLYSIS

AEROBIC CARBOHYDRAT

AEROBIC FATTY ACIDS

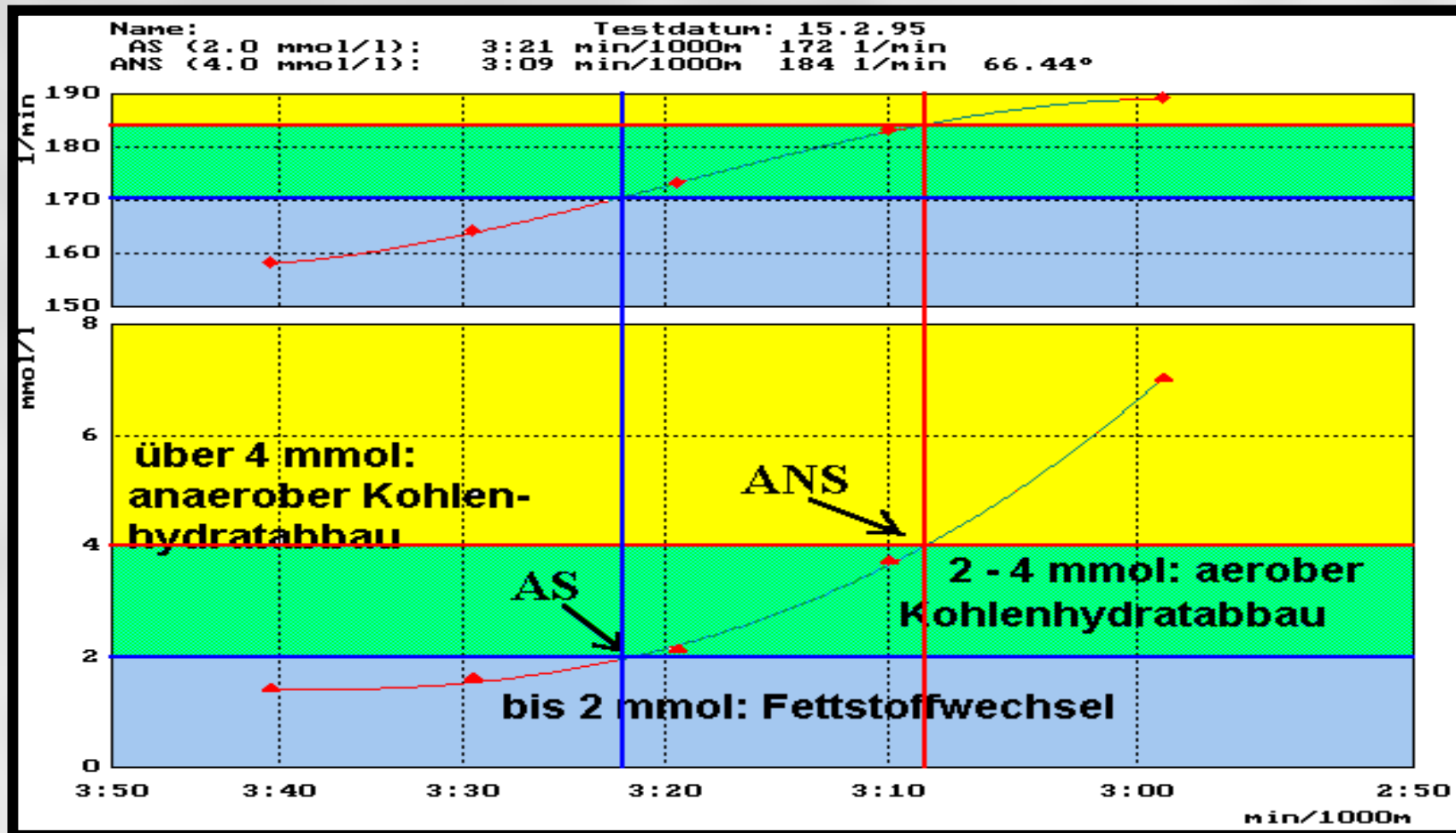
THE REFEREE

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Austria



LACTATE

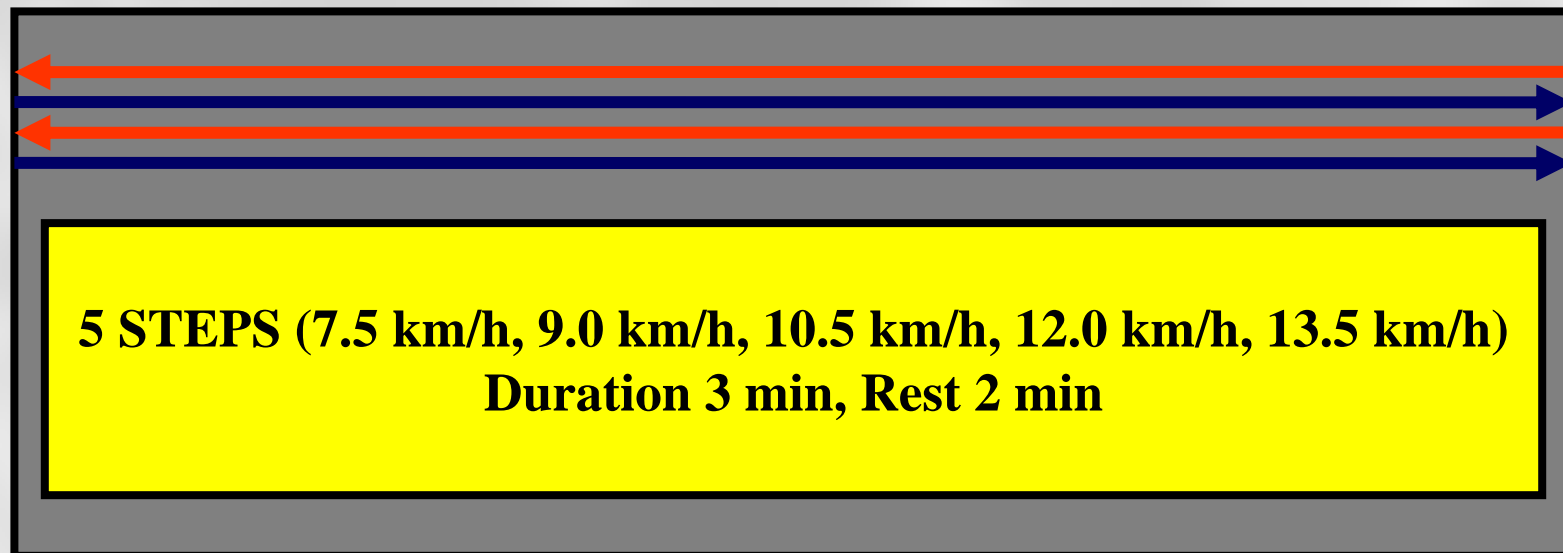
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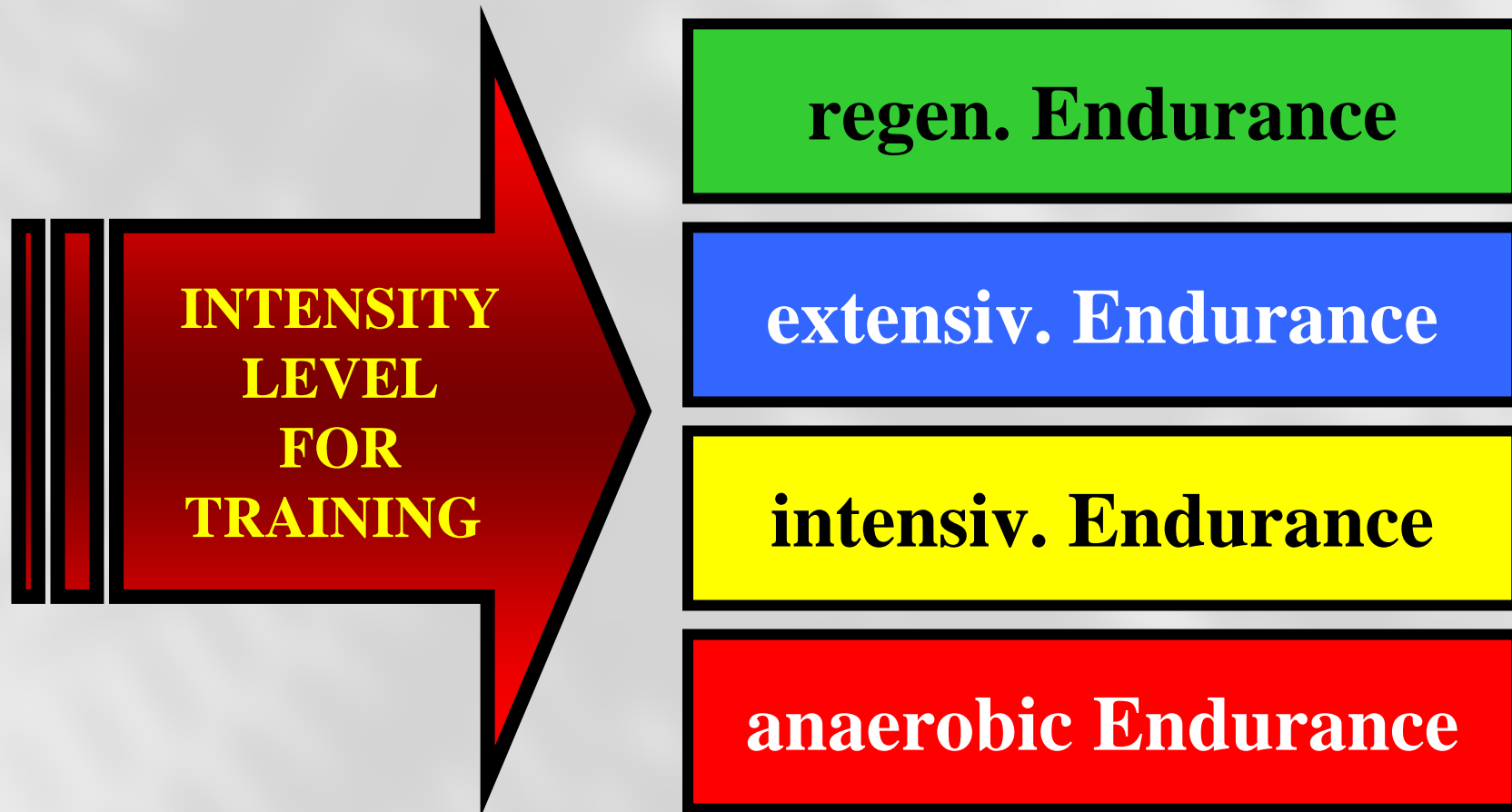
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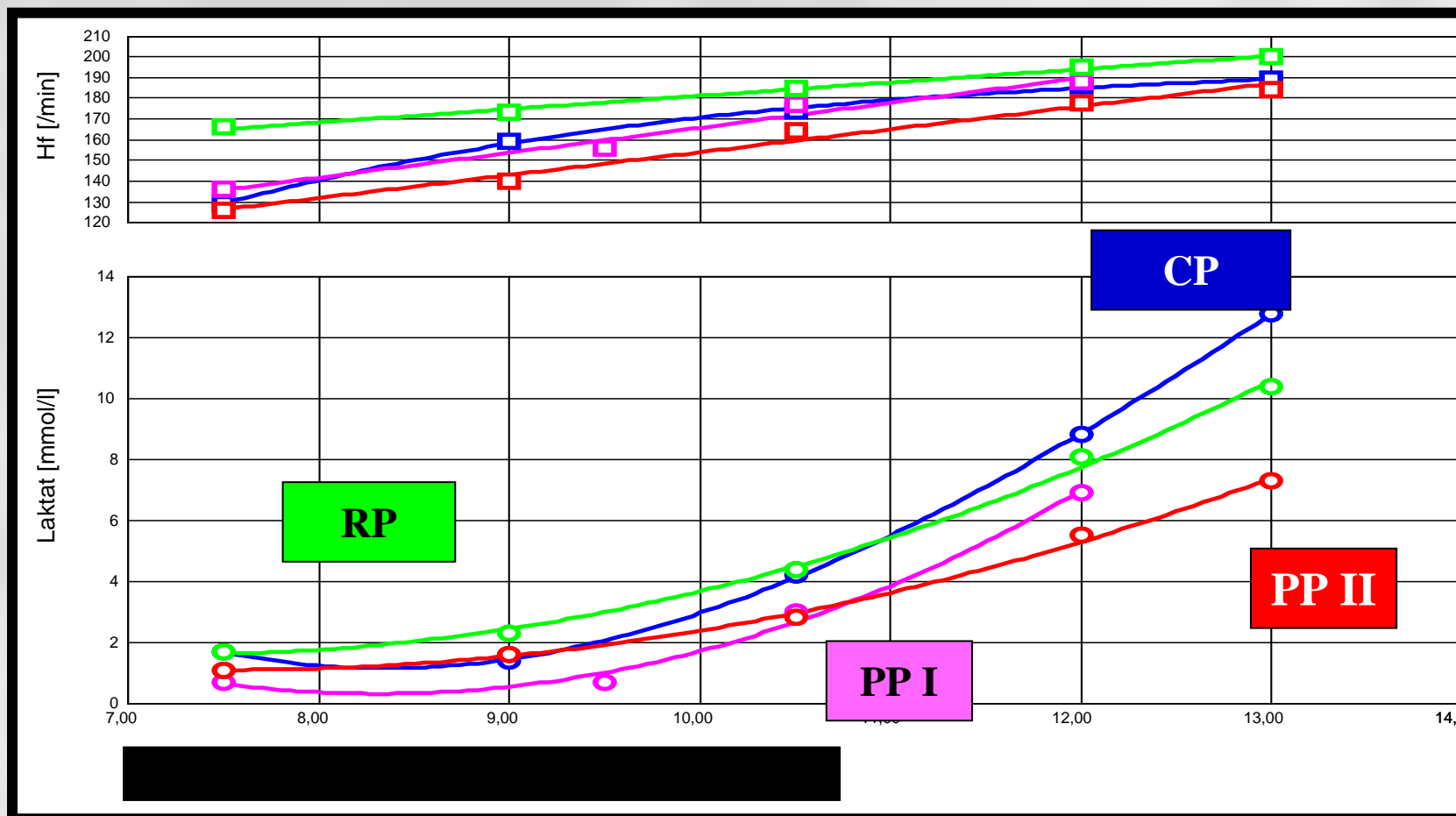
SHUTTLE-RUN



THE REFEREE



THE REFEREE



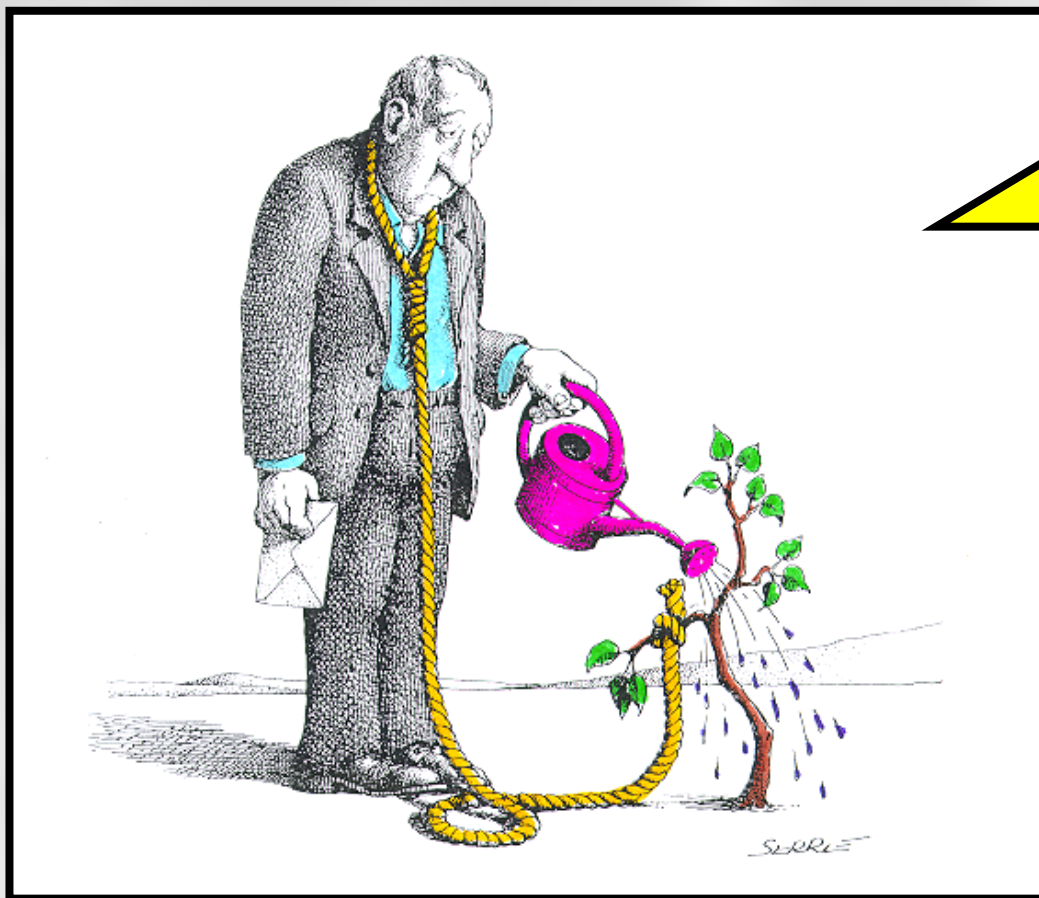
THE REFEREE



TESTRESULTS

**BASEMENT
FOR
BETTER
& EFFICIENT
TRAINING**

THE REFEREE



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THE REFEREE

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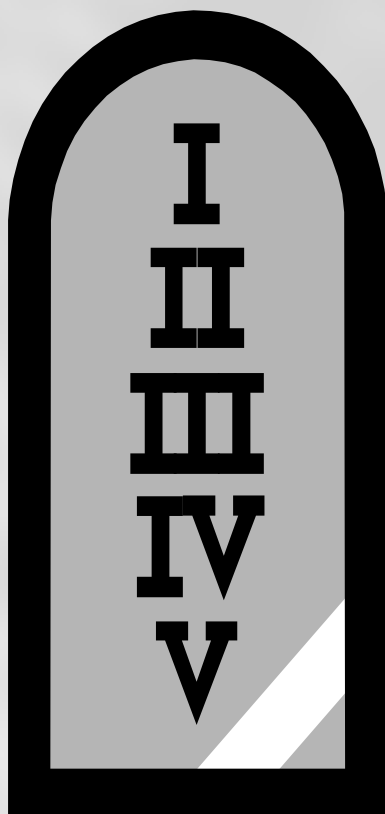


THE REFEREE

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THE REFEREE



**BASIC
TRAINING
PRINCIPLES**

PRINCIPLES

A background image of a mountain landscape with a prominent peak, partially covered in snow, under a clear blue sky. The image is overlaid with a dark red grid pattern.

PRINCIPLE OF CONTINUOUS TRAINING

PRINCIPLES



REGULARITY

LONG - TERM

PRINCIPLES

A background image of a mountain landscape with a prominent peak, partially covered in snow, under a clear blue sky. The image is overlaid with a dark red grid pattern.

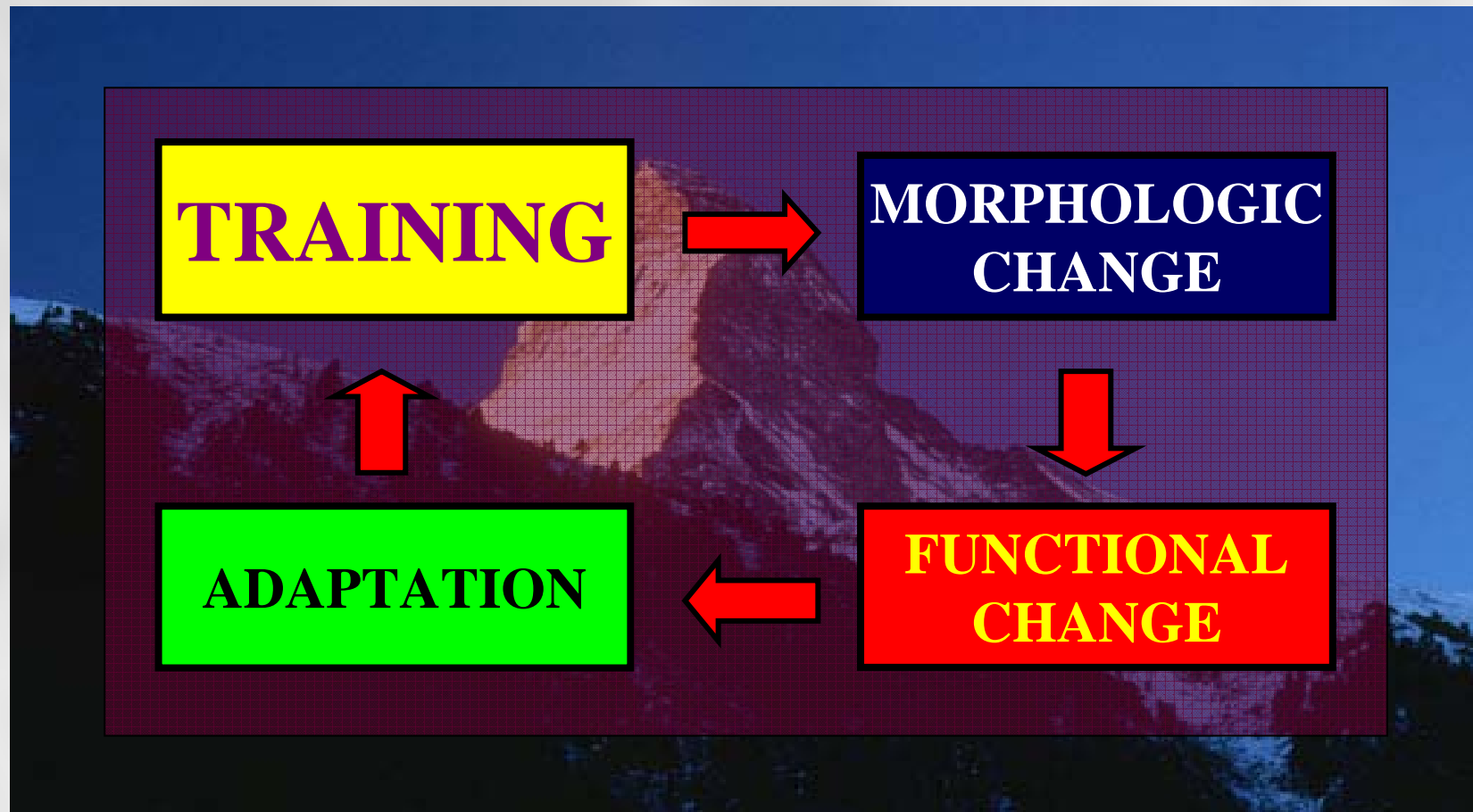
PRINCIPLE OF INCREASING TRAINING LOAD

PRINCIPLES

A photograph of a mountain peak, likely a ski resort, with a grid overlay. The text is centered on the grid.

CHANGE TRAINING
AFTER SUCCESSFUL
ADAPTATION

PRINCIPLES



PRINCIPLES

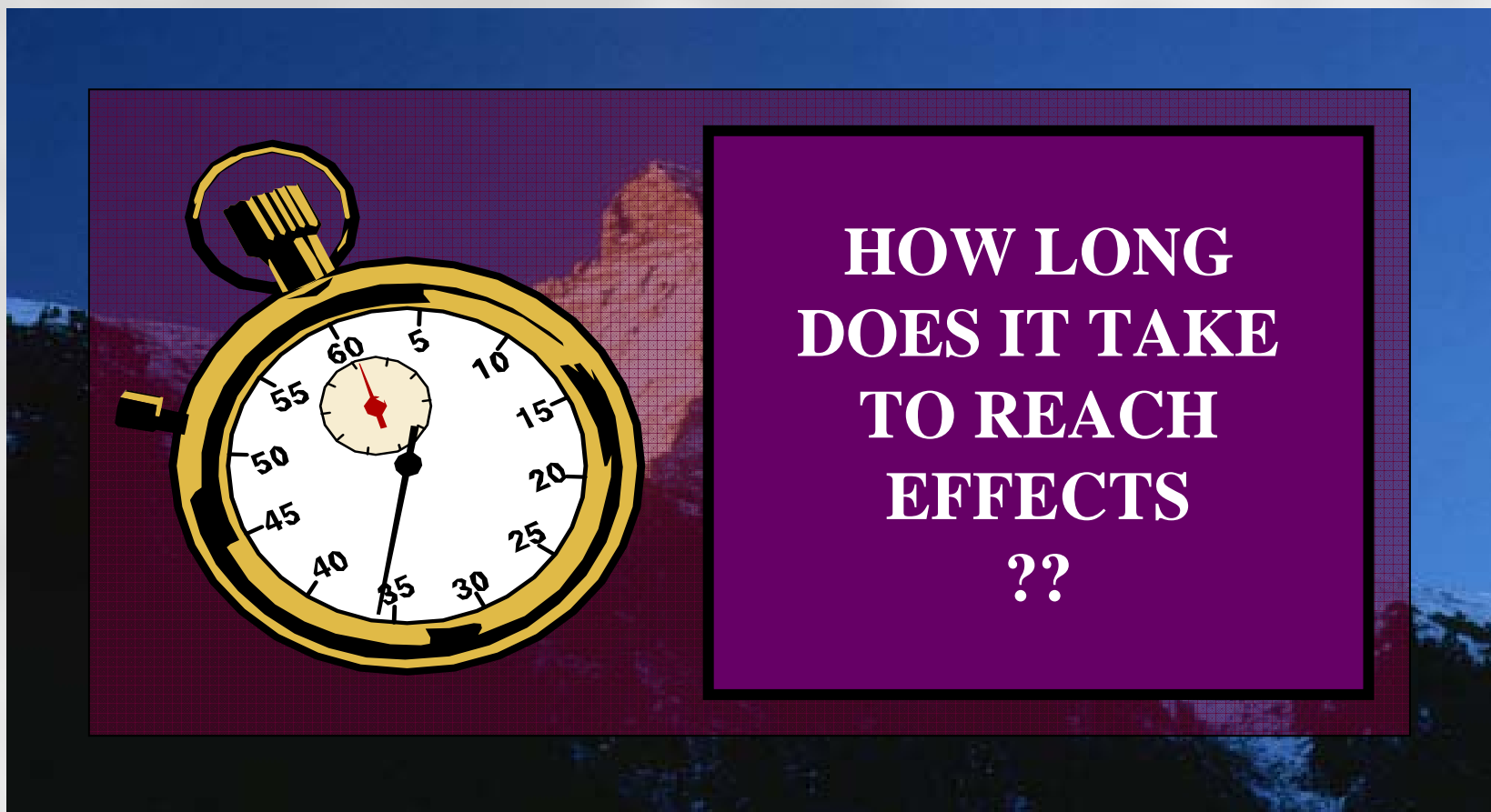


TRAINING SESSIONS

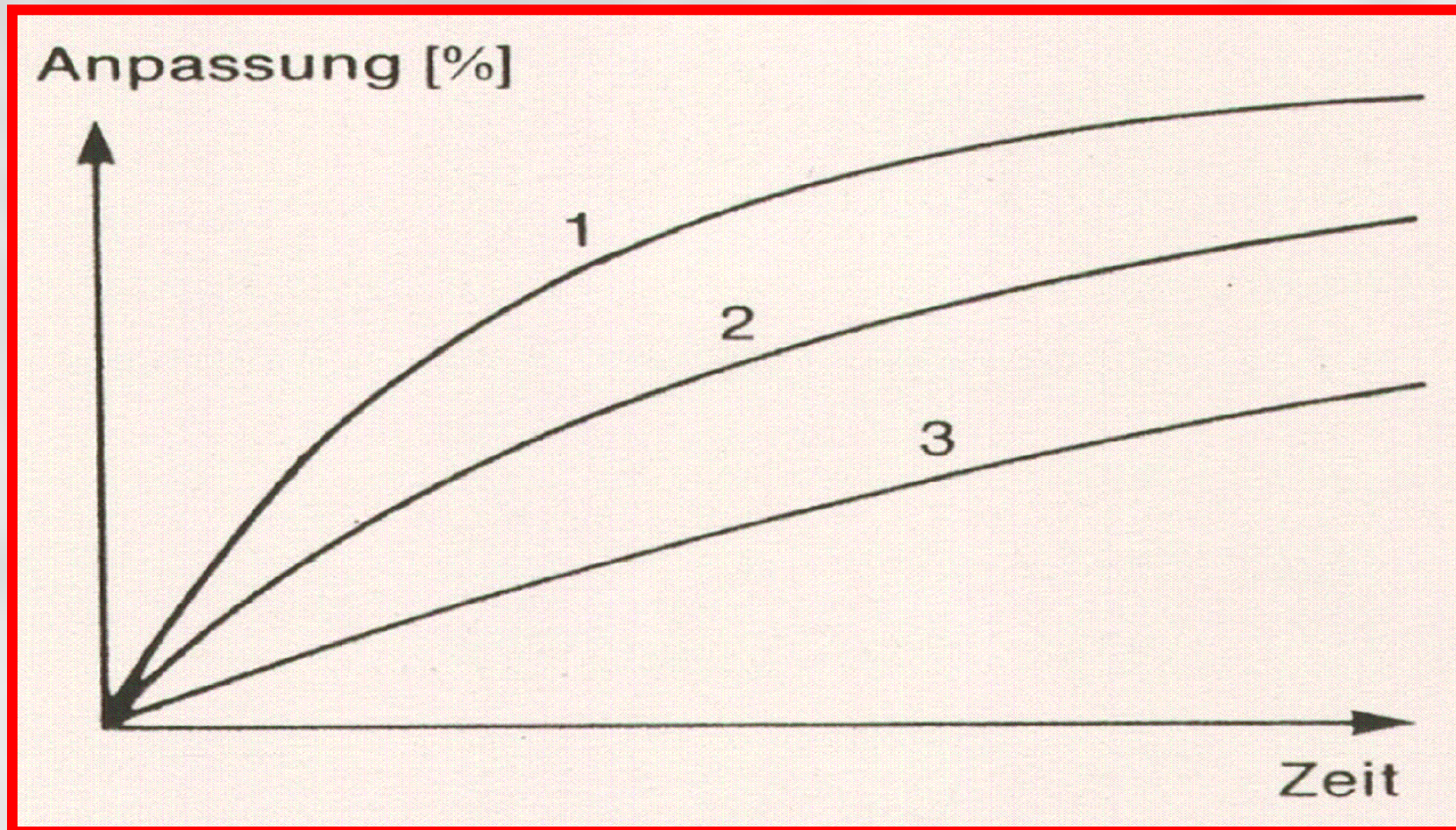
DURATION

INTENSITY

PRINCIPLES



PRINCIPLES



PRINCIPLES

ENDURANCE

8 – 12 w

POWER

6 – 8 w

FLEXIBILITY

2 – 4 w

COORDINATION

1 – 2 w

PRINCIPLES

A background image of a mountain landscape with a prominent peak, partially covered in snow, under a clear blue sky. The image is overlaid with a dark, semi-transparent grid pattern.

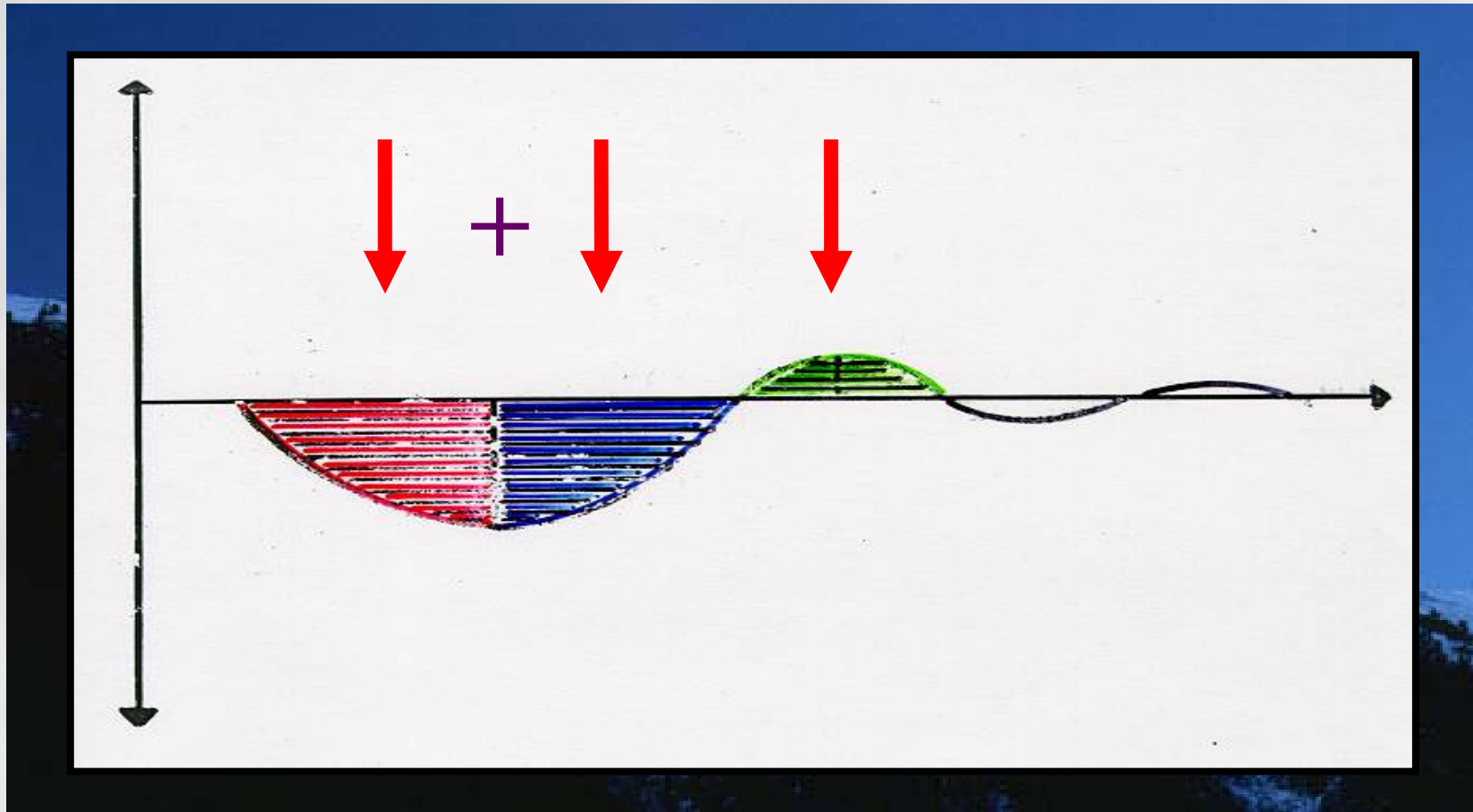
PRINCIPLE OF OPTIMAL RELATION LOAD / REGENERATION

PRINCIPLES



**TRAINING EFFECTS
ARE THE
PRODUCT OF A
SYSTEMATIC CHANGE
OF
LOADING AND REGENERATION**

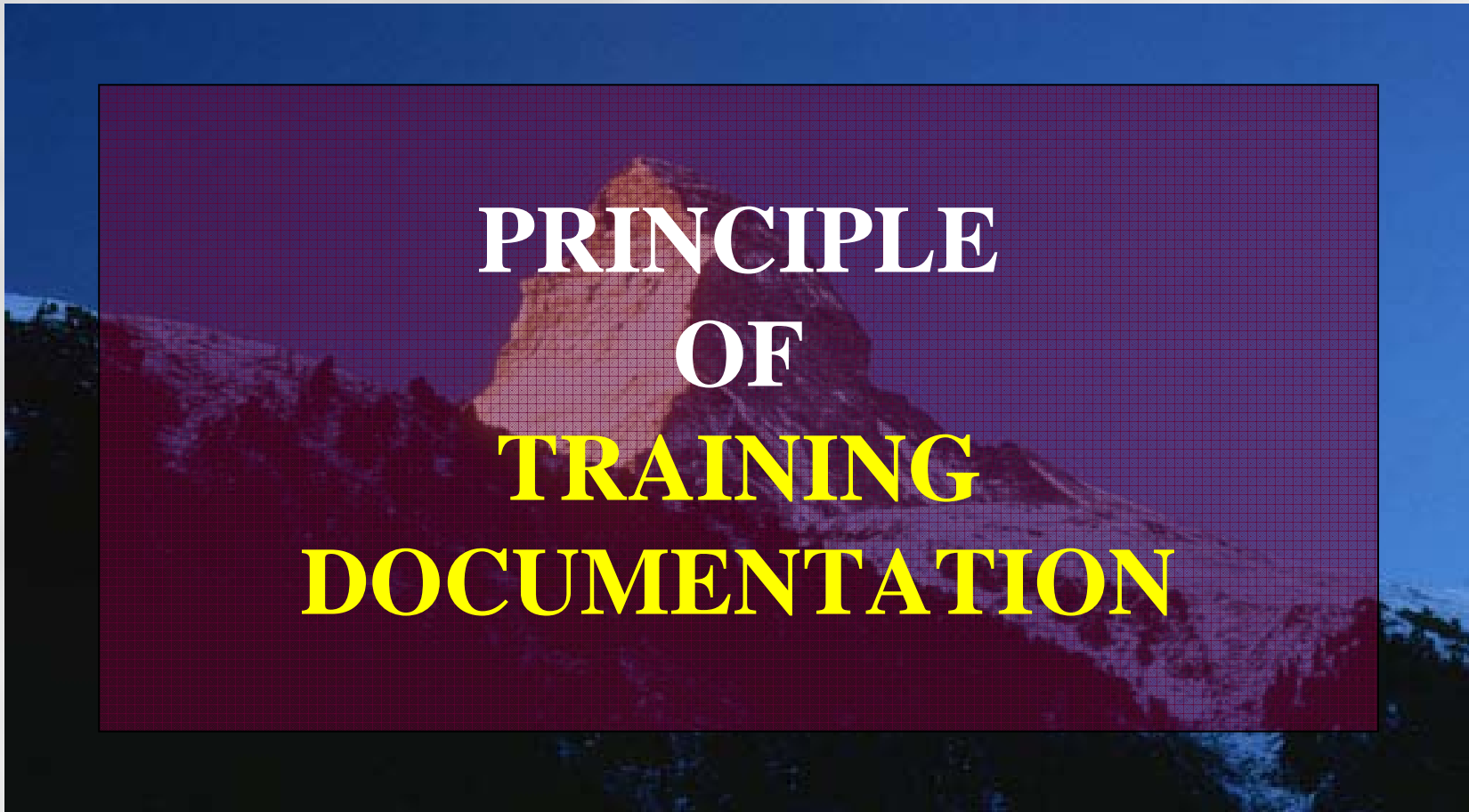
PRINCIPLES



PRINCIPLES



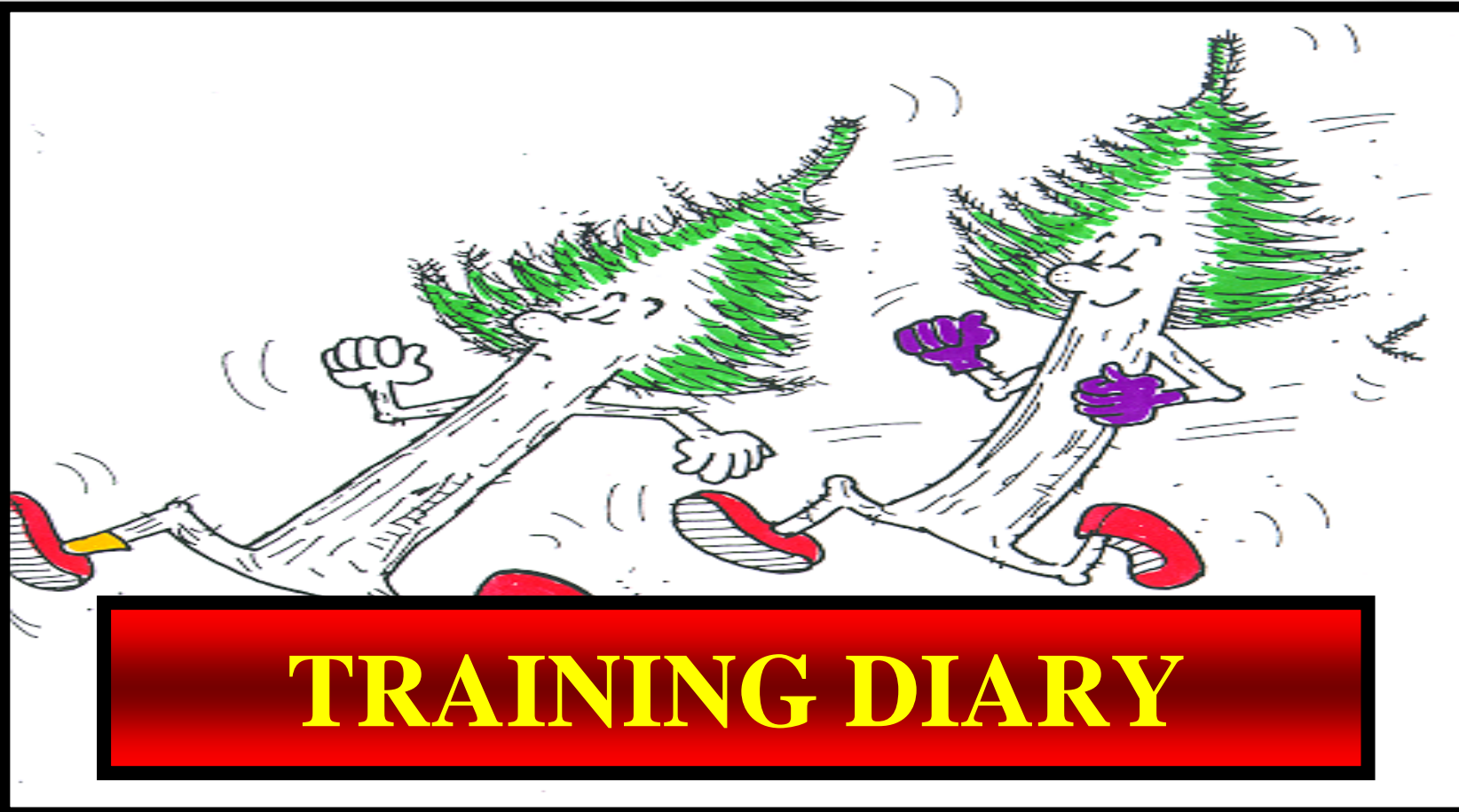
PRINCIPLES

A background image of a mountain landscape with a prominent peak, partially covered in snow, under a clear blue sky. The image is overlaid with a dark red, semi-transparent grid pattern.

PRINCIPLE OF TRAINING DOCUMENTATION

PRINCIPLES

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Austria



TRAINING DIARY

PRINCIPLES



DAY	DATE	CONTENT	km	TIME	OTHER ACTIVITIES	MOOD
MONDAY	06.Mär	reg. E	10	60 min	30 min gym	good
TUESDAY	07.Mär					
WEDNESDAY	08.Mär	ext. E	10	50 min	20 min gym	tired at the end
THURSDAY	09.Mär					
FRIDAY	10.Mär	ext / int. E	12	10:00-38:30-12:00	15 min gym	good
SATURDAY	11.Mär					
SUNDAY	12.Mär	reg. E	15	1:30:15	30 min gym	excellent
SUM	-	-	47	275 min	80 min	-

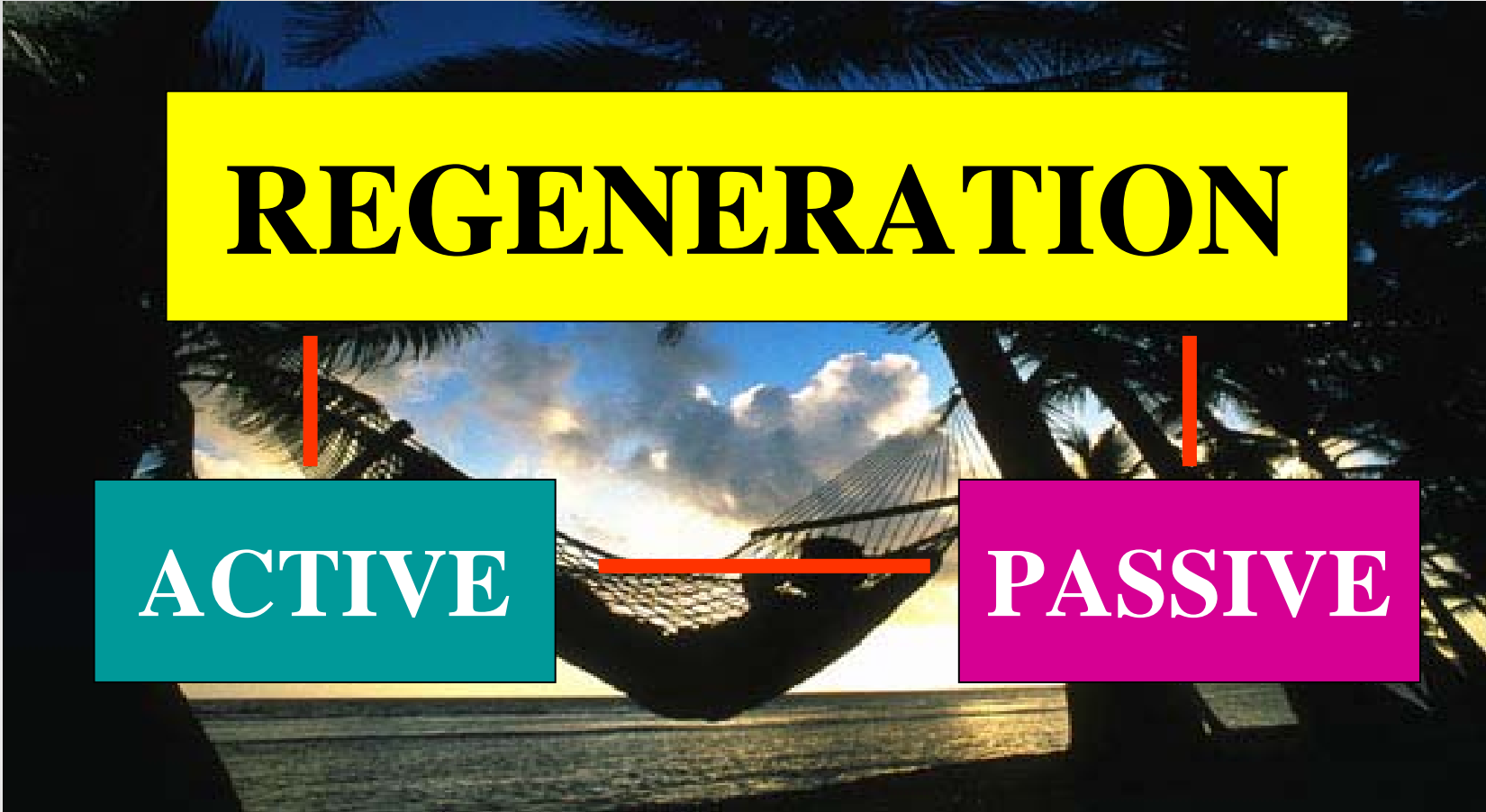
THE REFEREE



REGENERATION



REGENERATION



REGENERATION



ACTIVE
REGENERATION
IS AN **ESSENTIAL**
PART OF THE
TRAININGSESSION

REGENERATION

**SLOW RUN
GYMNASTIC
STRETCHING**



REGENERATION



**LOW INTENSITY
HF app. 100 – 120 b/min**

STRETCHING

app. 10 - 30 min

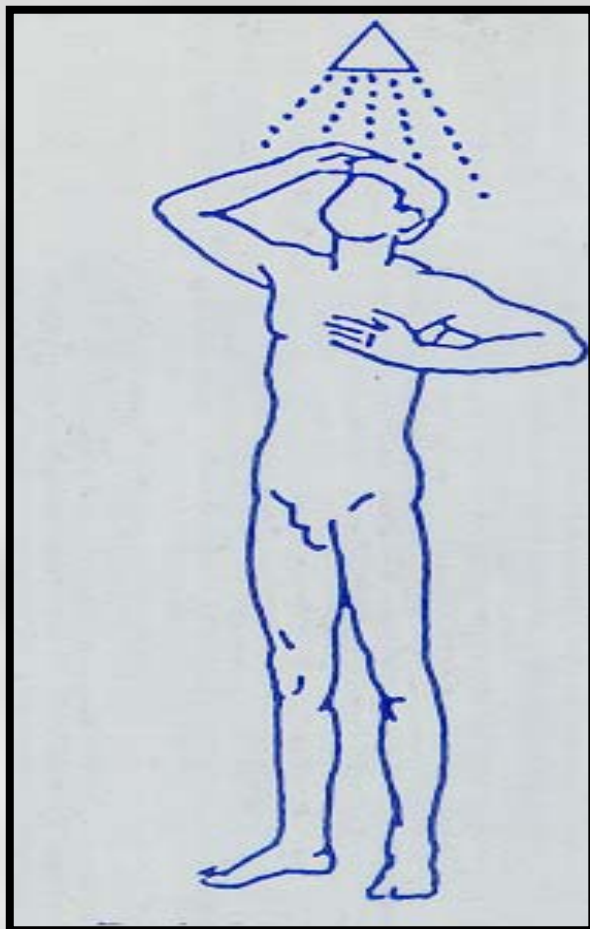
REGENERATION

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Austria



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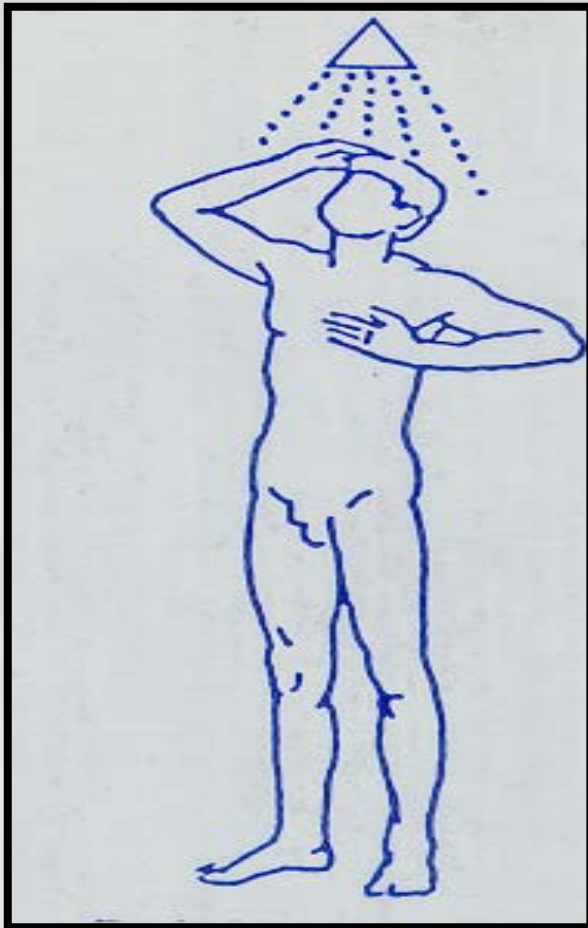
REGENERATION



SHOWER

5-10 min
warm

REGENERATION



SHOWER

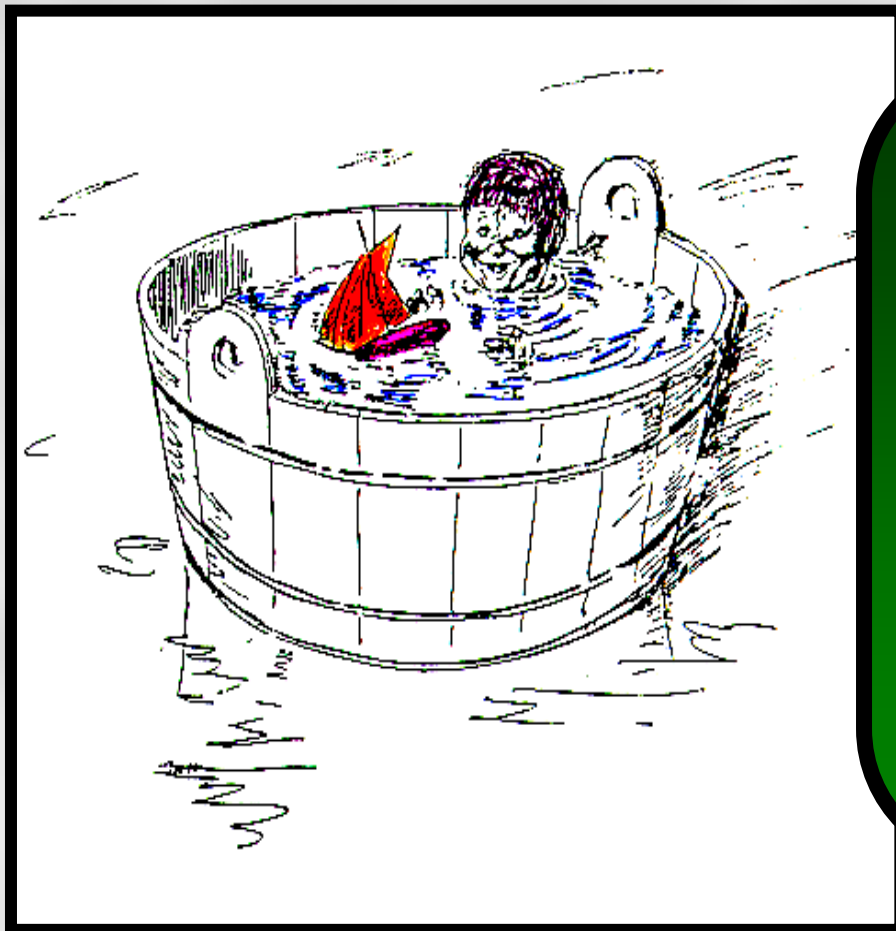
1-2 min warm

10-30 sec cold

3-4 x

REGENERATION

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BATH

15-20 min
38-39°

REGENERATION

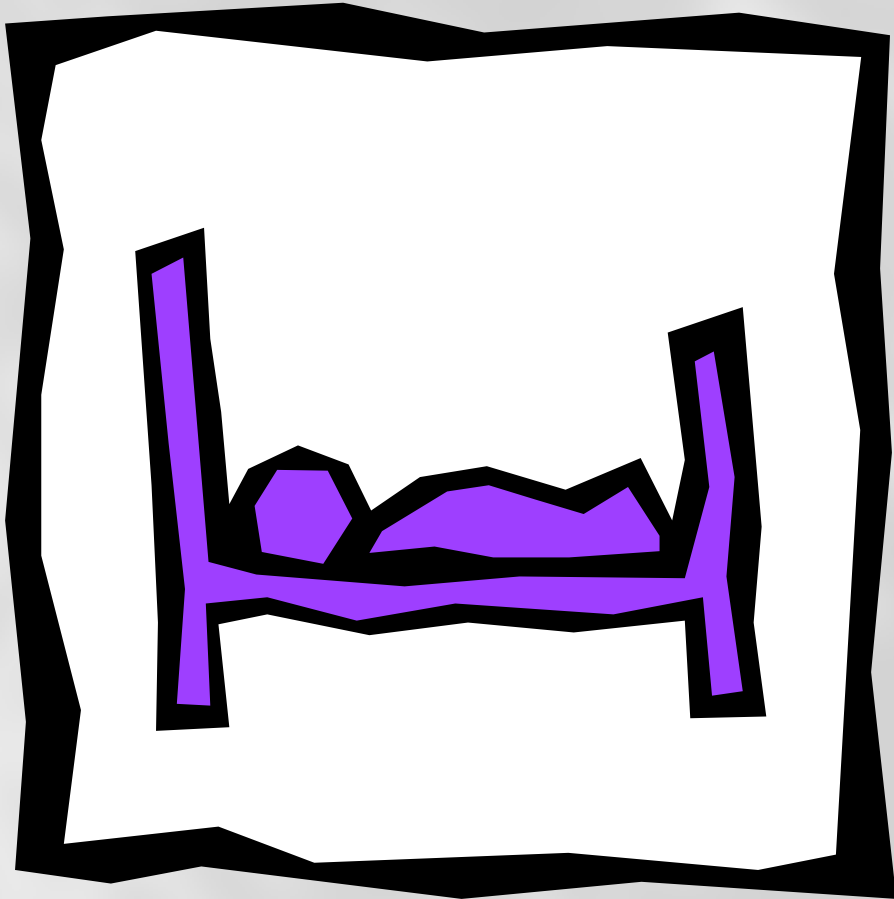


SAUNA

**< 70°
dry**

**leave when you
start sweating**

REGENERATION



SLEEP

POWER NAP

REGENERATION

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REGENERATION

A photograph of a hammock strung between two palm trees, set against a sunset sky. The hammock is empty and hangs in the center of the frame. The palm trees are silhouetted against the bright, orange and yellow sky. The water of a beach is visible in the foreground.

RELAXING METHODS

REGENERATION



JACOBSON

AT

YOGA

TAI CHI

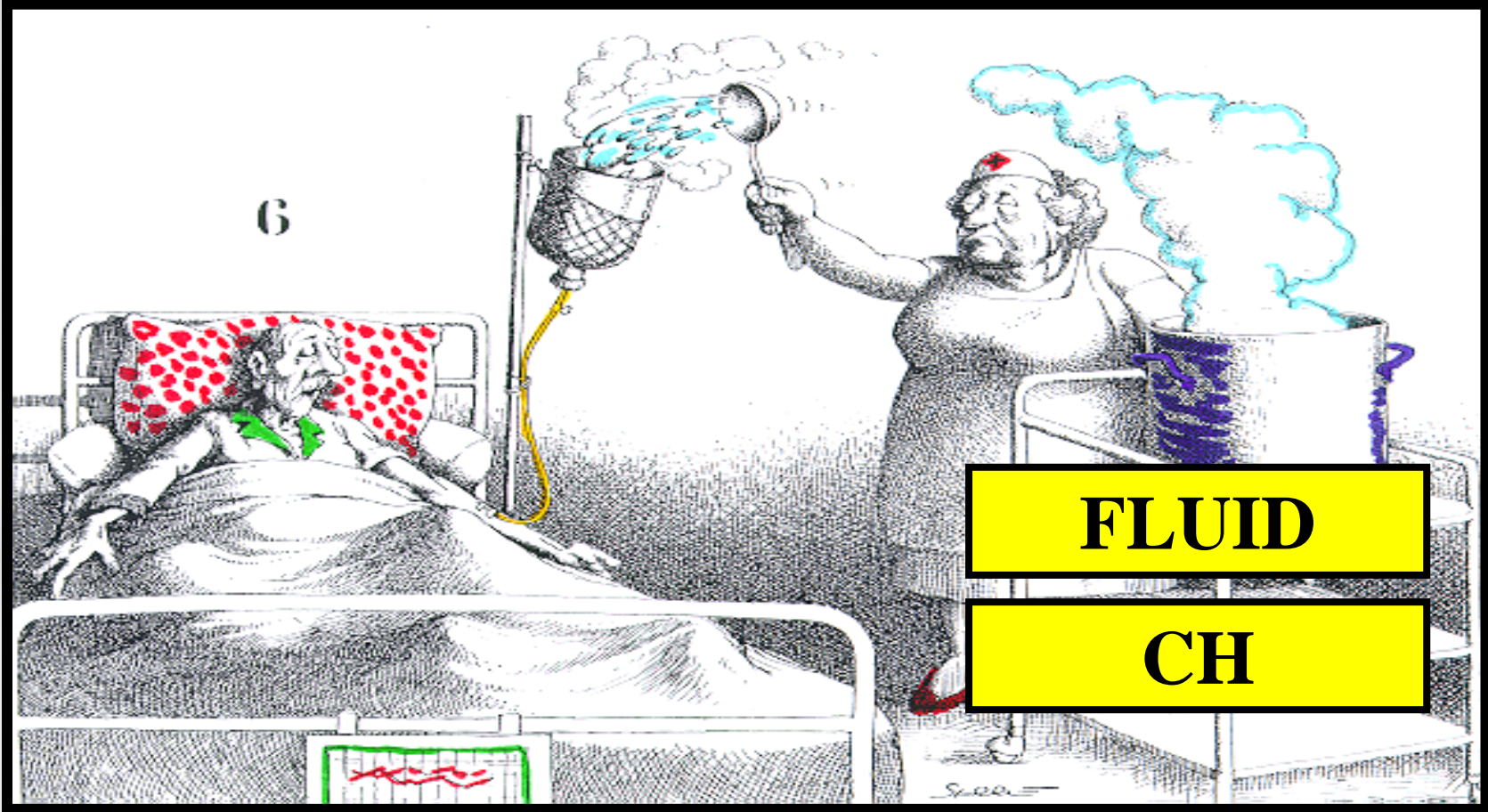
QI GONG

REGENERATION



NUTRITION

REGENERATION



REGENERATION

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PHYSIOTHERAPY

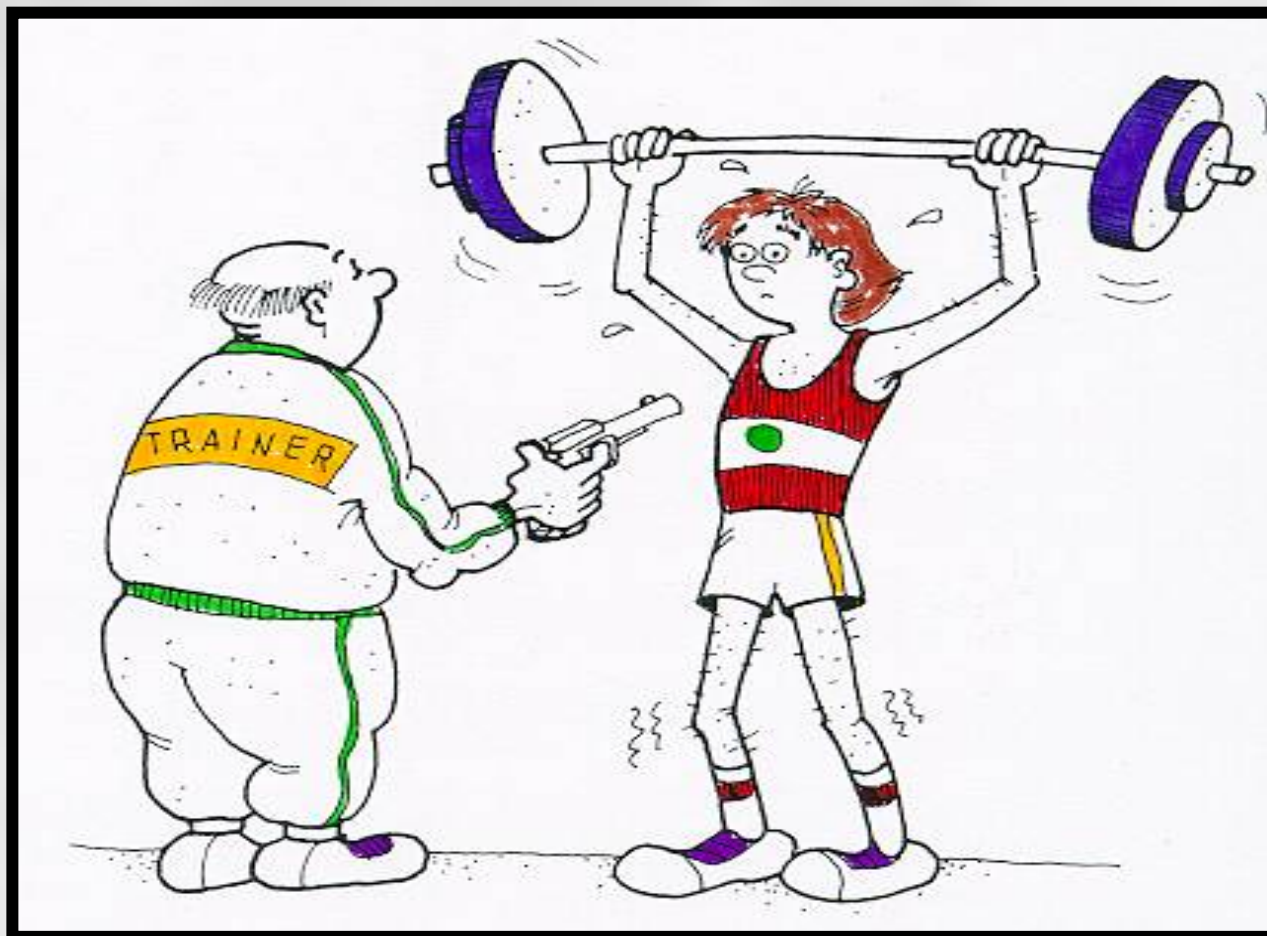
REGENERATION

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**FIND OUT YOUR
INDIVIDUEL
REGENERATION
PROGRAM**

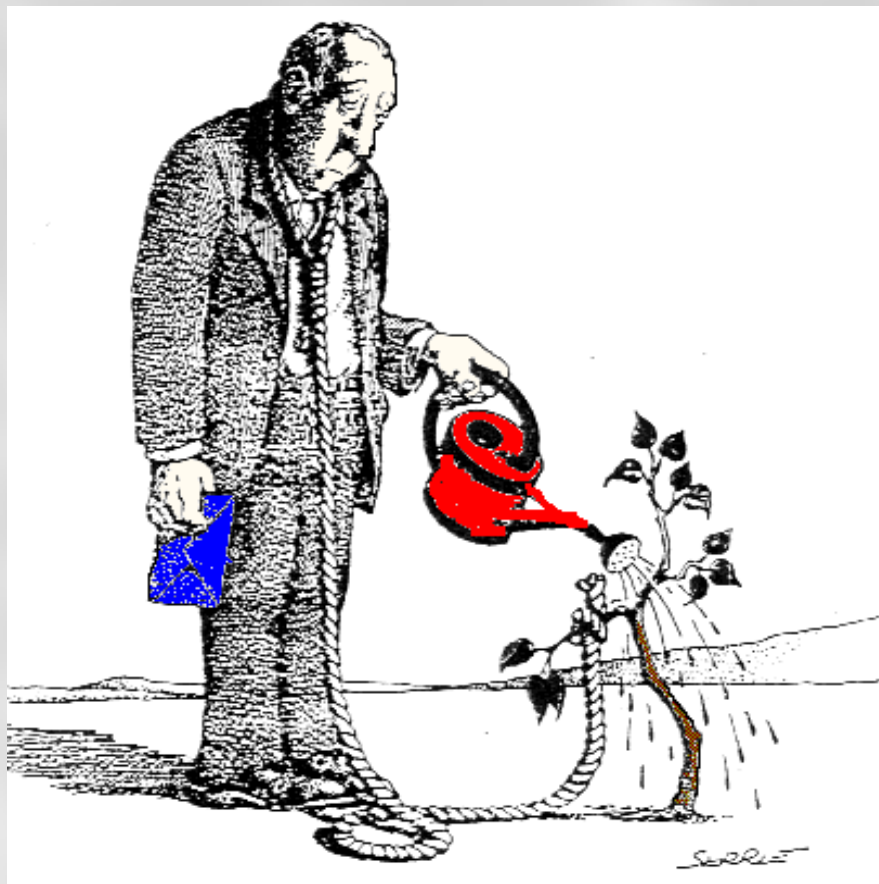
THE REFEREE



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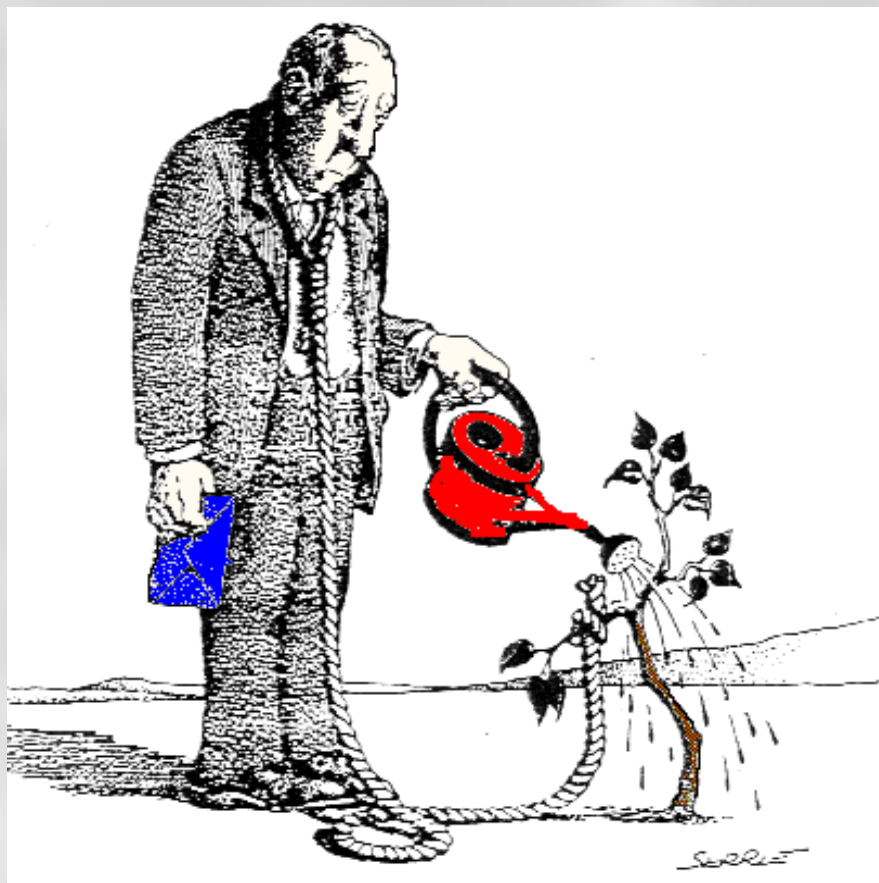
THE REFEREE

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**DON'T
WORRY**

THE REFEREE



YOUR
TIME
WILL
COME

IMSB - Austria



**THANK
YOU**