

Prevention in modern handball



FRH
FEDERAȚIA ROMÂNĂ DE HANDBAL



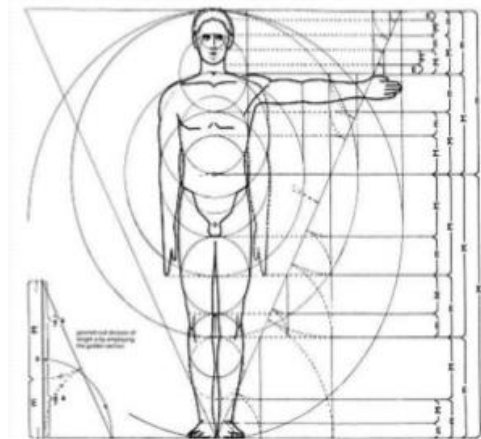
CLINICAL GENERAL QUESTIONNAIRE

*Latest sports medical opinion was favorable
for practice sports ?*

- **Personal pathology assessment**
- **Cardiovascular system question questions**
- **Neurology system questions**
- **Respiratory system questions**
- **Eye and ear questions**
- **Musculoskeletal questions**

Clinical general examination at 6 month

- * Inspection
 - * Palpation
 - * Auscultation
 - * Percussion / percussion
-
- * Anthropometry /
anthropometric measurements
/ B.M.I.



Lab analysis at every 6 month

- * Internal Medicine – Full blood count
- * Immunological tests
- * Creatine Kinase-MB
- * Liver lab analysis / tests
- * Minerals and vitamins

Abnormal ECG findings in athletes

These ECG findings are unrelated to regular training or expected physiologic adaptation to exercise, may suggest the presence of pathologic cardiovascular disease, and require further diagnostic evaluation.

Abnormal ECG finding	Definition
T wave inversion	> 1 mm in depth in two or more leads V2-V6, II and aVF, or I and aVL (excludes II, aVR, and V1)
ST segment depression	= 0.5 mm in depth in two or more leads
Pathologic Q waves	> 3 mm in depth or > 40 ms in duration in two or more leads (except II and aVR)
Complete left bundle branch block	QRS = 120 ms, predominantly negative QRS complex in lead V1 (QS or rS), and upright monophasic R wave in leads I and V6
Intra-ventricular conduction delay	Any QRS duration = 140 ms
Left axis deviation	-30° to -90°
Left atrial enlargement	Prolonged P wave duration of > 120 ms in leads I or II with negative portion of the P wave = 1 mm in depth and = 40 ms in duration in lead V1
Right ventricular hypertrophy pattern	$R-V_1 + S-V_5 > 10.5$ mm <u>and</u> right axis deviation > 120°
Ventricular pre-excitation	PR interval < 120 ms with a delta wave (slurred upstroke in the QRS complex) and wide QRS (> 120 ms)
Long QT interval*	QTc = 470 ms (male) QTc = 480 ms (female) QTc = 500 ms (marked QT prolongation)
Short QT interval*	QTc = 320 ms
Brugada-like ECG pattern	High take-off and downsloping ST segment elevation followed by a negative T wave in = 2 leads in V1-V3
Profound sinus bradycardia	< 30 BPM or sinus pauses = 3 sec
Mobitz type II 2° AV block	Intermittently non-conducted P waves not preceded by PR prolongation and not followed by PR shortening
3° AV block	Complete heart block
Atrial tachyarrhythmias	Supraventricular tachycardia, atrial fibrillation, atrial flutter
Premature ventricular contractions	= 2 PVCs per 10 second tracing
Ventricular arrhythmias	Couplets, triplets, and non-sustained ventricular tachycardia

*The QT interval corrected for heart rate is ideally measured with heart rates of 60-90 bpm. Consider repeating the ECG after mild aerobic activity for borderline or abnormal QTc values with a heart rate < 50 bpm.

Normal ECG findings in athletes

These common training-related ECG alterations are physiological adaptations to regular exercise, considered normal variants in athletes, and do not require further evaluation in asymptomatic athletes.

Sinus bradycardia (≤ 30 bpm)

Sinus arrhythmia

Ectopic atrial rhythm

Junctional escape rhythm

1° AV block (PR interval > 200 ms)

Mobitz Type I (Wenckebach) 2° AV block

Incomplete RBBB

Isolated QRS voltage criteria for LVH

Except: QRS voltage criteria for LVH occurring with any non-voltage criteria for LVH such as left atrial enlargement, left axis deviation, ST segment depression, T wave inversion, or pathologic Q waves

Early repolarisation (ST elevation, J point elevation, J waves, or terminal QRS slurring)

Convex ("domed") ST segment elevation combined with T wave inversion in leads V1-V4 in Afro/Caribbean athletes

BMJ Learning

British Journal of
SPORTS MEDICINE



???

TESTING

!!!

?

1. Why ?
2. What ?
3. How ?

!

!

Interpretation !
Correlation !
Application !

?



TESTING



why what how

1. For **healthy athletes** and **performance**
2. **Morphological characteristics** and **motor abilities**
3. With specific **medical devices** and use **sports medicine programs**

Interpretation Correlation Application

1. Predict **weaknesse**, **illness**, or **future performance capacity**
2. Follow, **develop** and **improve**
3. Place the athlete in **appropriate training group** and help the coach to **develop** or **increase the athletes performances**

Types of test

- * Aerobic Endurance - VO₂ max
- * Anaerobic Endurance
- * Agility
- * Balance
- * Coordination
- * Event Time Predictors
- * Fitness General
- * Flexibility
- * Psychology
- * Reaction Time
- * Strength - Core
- * Strength - Elastic
- * Strength - General
- * Speed and Power
- * Talent Evaluation
- * Tests for young athletes

Aerobic endurance test

- * Astrand Treadmill test
- * Astrand 6 minute Cycle test
- * Balke VO_2 max test
- * Balke Incremental treadmill protocol test
- * Bruce Incremental treadmill protocol test
- * Cooper VO_2 max test

The chemical ability of the muscular cellular tissue system to use oxygen in
breaking down fuels

The combined ability of cardiovascular and pulmonary systems to transport
the oxygen to the muscular tissue system

Anaerobic tests

- * The Wingate test
- * Cunningham and Faulkner Test
- * RAST

TESTING in FIELD

Telemetry systems

Testing in **real time** for one player or for all team

Protocols for **aerobic and anaerobic test**

Protocols for **agility, reaction time, speed and power**

Calculate **energy consum**

Customize your **own protocol** for each type of training

Develop **charts and statistical analysis**

Sports medicine conclusions after testing

Provide information about the reaction of the cardiovascular system subjected at the stress **(healthy / unhealthy)**

Provide information about the VO₂ max or Anaerobic power and set out the training program **(trained / untrained)**

Can help the coach for Selection, place the athlete in appropriate Training group, Training program
(titular / reserve / first team / second team – type of training)

Cardiovascular and pulmonary prevention

- * **Prevent sudden death**
- * **Make differences between cardiovascular disease and normal athletes heart (modifications of the athletes heart)**
CLINICAL GENERAL QUESTIONNAIRE ; CARDIOVASCULAR EXAMINATION AND STRESS TESTS
- **Establish the modifications the modifications of the pulmonary system**
- **Diagnosis the asthma or other pulmonary disease and establish the protocol for treatment and training**

**PREVENT AND MEDICAL SUPERVISION
OF THE TRAINING**

Liver protection

- * Clinical medical examinations
- * **Medical labs testing (tests for hepatitis A, B, C, liver enzymes)**
- * Medical ultrasound investigation
- * **Prescribe Hepatoprotective pills**
- * **Prescribe effort supplements pills**

A **healthy liver** is essential to **optimum performance**
Good liver function is required to burn fat, build muscle, and provide energy.

Muscular injury prevention

- * Pay attention to life style
- * **Pay attention to hydration and nutrition**
- * Avoid training when you are sick or very tired
- * Allow lots of time for warming up and cooling off
- * Increase in training should be matched with increases in resting and recovery (medications, activ and pasiv recovery)
- * Pay attention at the muscular imbalance
- * **After medical recovery start training pregressive**

Osteoarticular and joints prevention

- * Avoid training when you are sick or very tired
- * Allow lots of time for warming up and cooling off
- * Pay attention at the muscular imbalance
- * Use protections – Orthosis or neoprene products
- * Eat food with Calcium, Vit C, Vit D, and others necessary for bone and joints
- * Take vitamins and minerals necessary for bone, joints, and muscles

Prevention and Treatment Orthosis

Double role

Recurrent trauma

Muscular injuries – neoprene pants

Bones and Joints injuries

Postsurgery interventions

MOST USED orthosis are for: ankle and knee

Rehabilitations for athletes

*only with medical prescription

Classic

- * Physio-therapy
- * Physical-therapy
- * Classic types of physiotherapy

New

- * Laser – high power
- * Crioultrasound
- * Tcare – Transfer Capacitive Resistive Energy
- * ShockWave

Preventive and treatment Injections for athletes

*only with medical prescription

Double role

Intra-articular and Peripheral Joint Injections

Most used :

- * Platelet-Rich Plasma (PRP)
- * Hyaluronic Acid Injections
- * PRP + Hyaluronic Acid Injections
- * Bone Marrow Cell Concentrate (BMCC)

Cardio
vascular

• **Body's motor**

Liver

• **Body's lab**

Muscular
injury

• **Body's transmission**

Osteoarticular
and joint

• **Body's motric support**

Hydration and
Alimentation

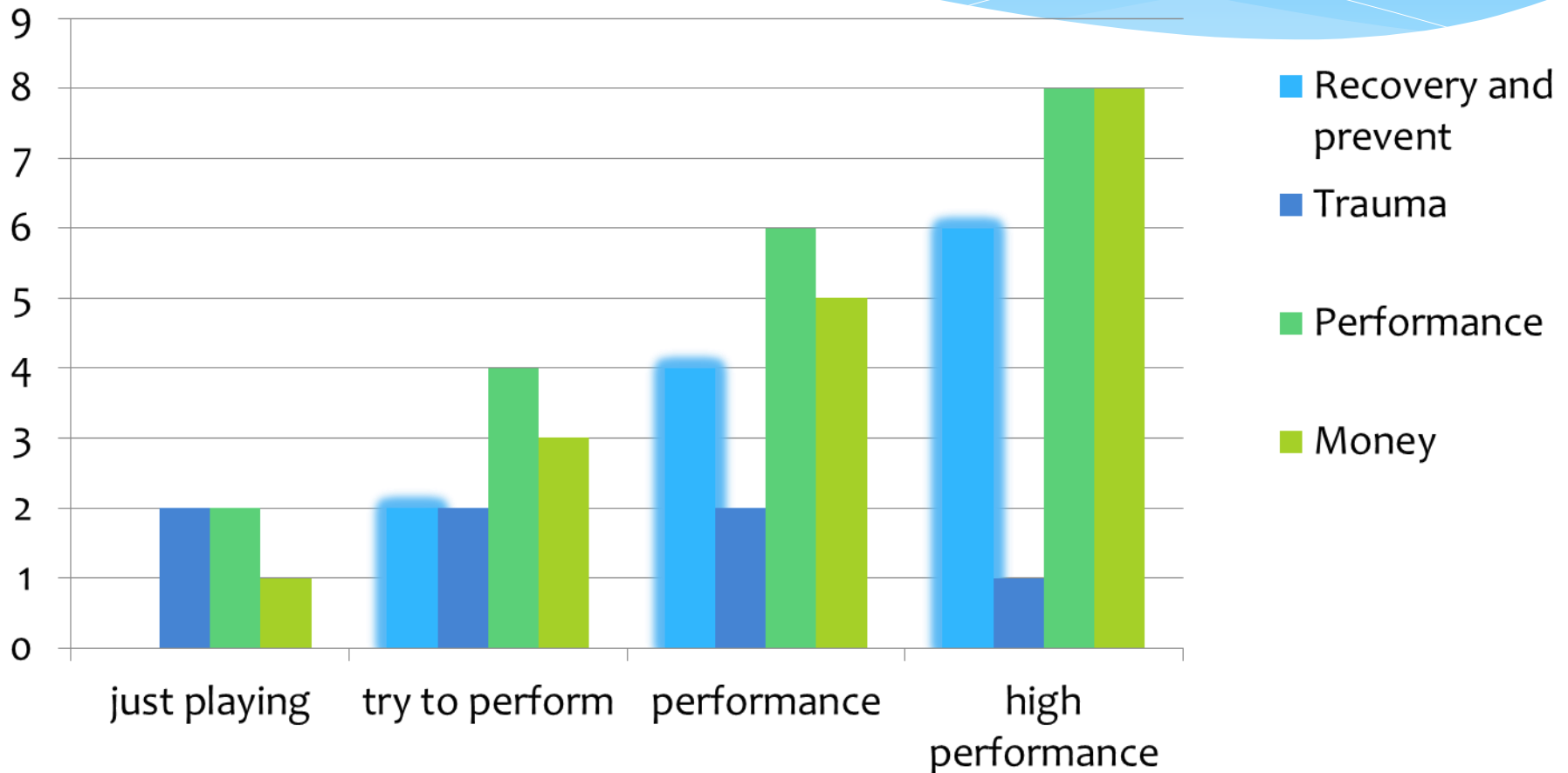
• **Body's Fluids and carburants**

Recovery vs
Rehabilitation

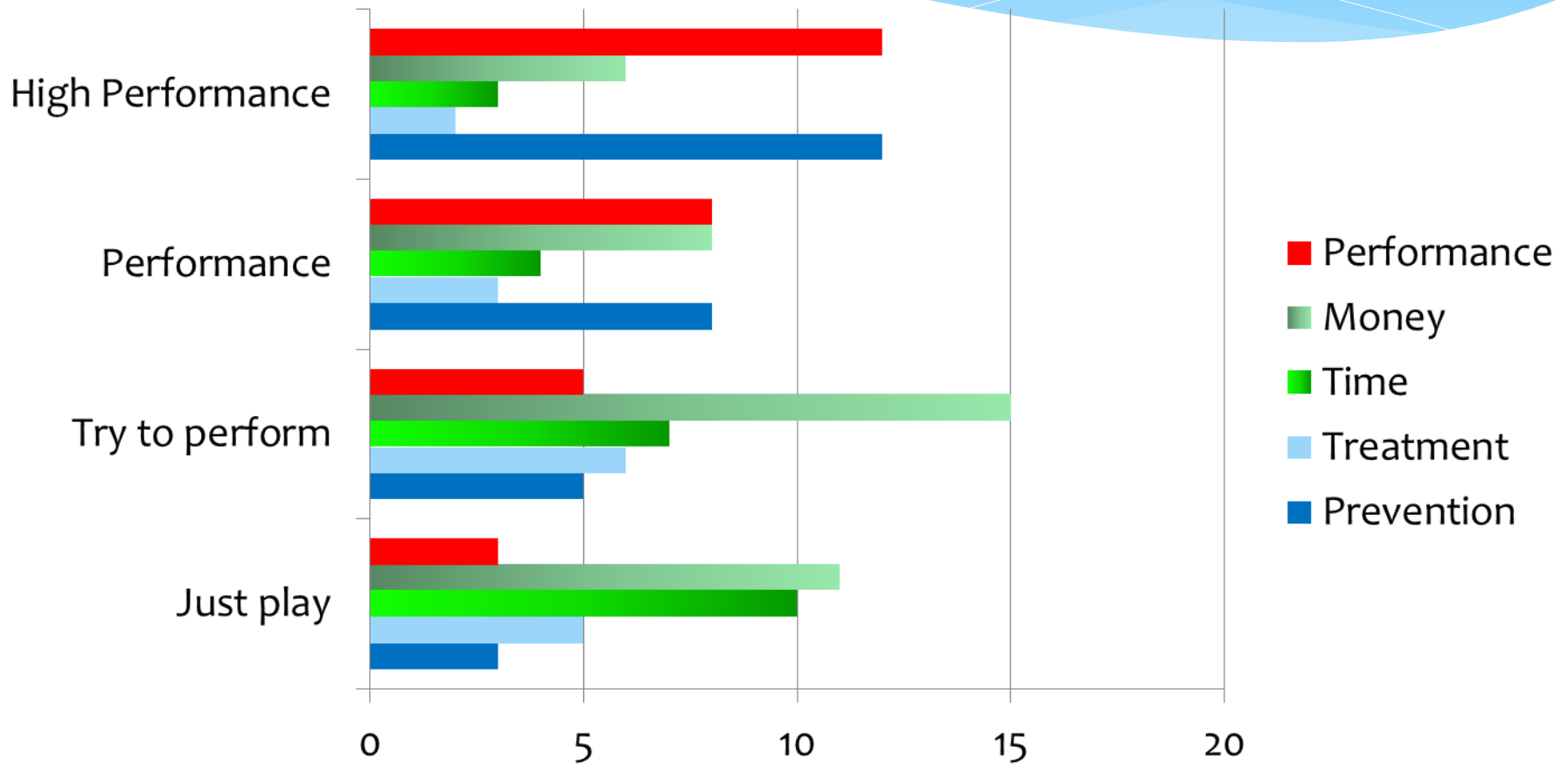
• **Body's revision**

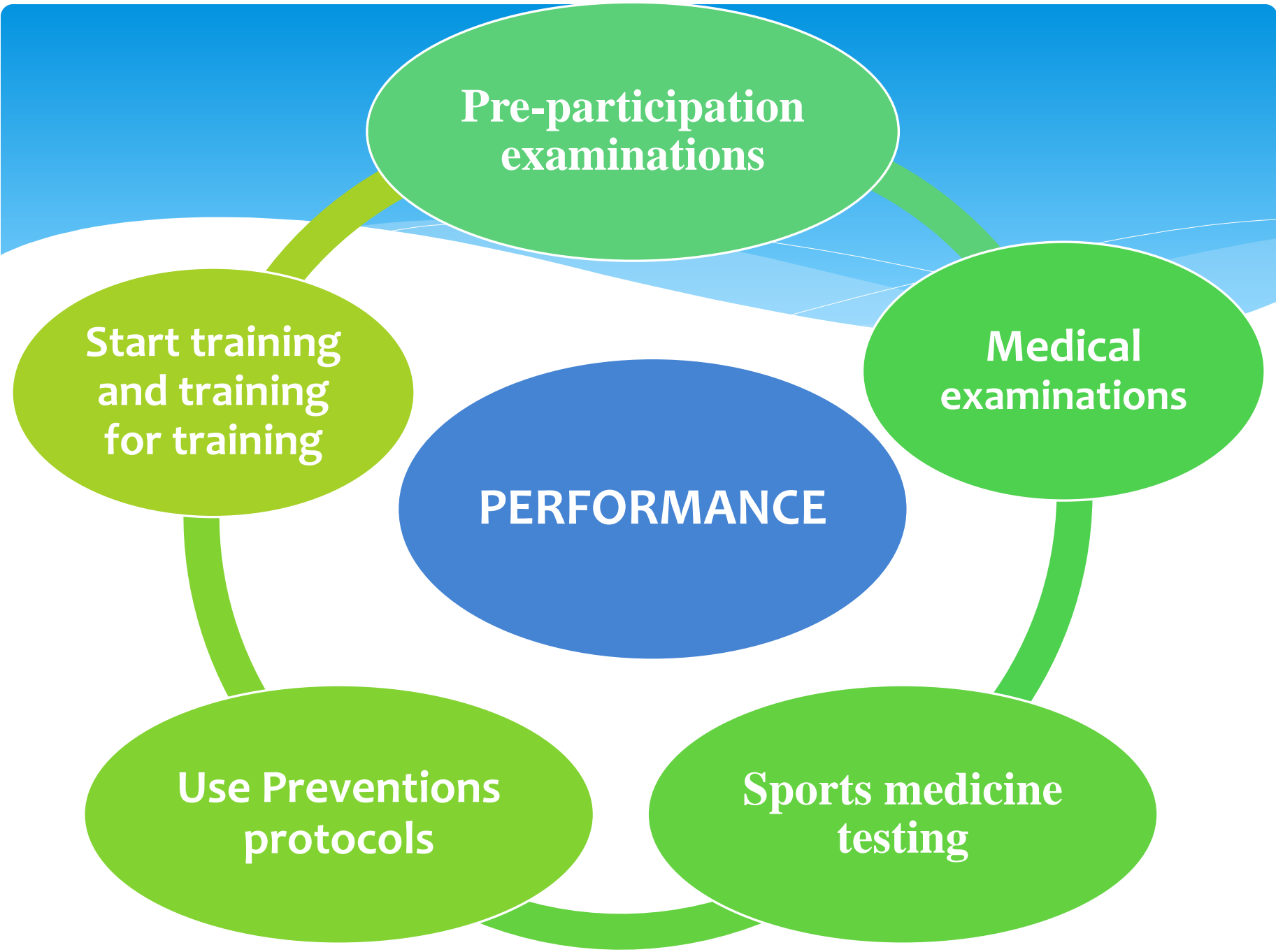
High Recovery **vs**

Low rehabilitation



Prevent more and win time





Pre-participation examinations

Medical examinations

PERFORMANCE

Start training and training for training

Use Preventions protocols

Sports medicine testing

Stay healthy and play handball



Thank you,

Multumesc

dr. Ciocoiu Florin

dr. Omer Şenol