# MODULE 2

## TENNIS BALANCE AND MOTOR PREFERENCES

# WHERE TO START ?


To coach an athlete, you must consider is "off field environment" and his life, in order to complete all the information you need to prepare is athletic planning., regarding his goals.

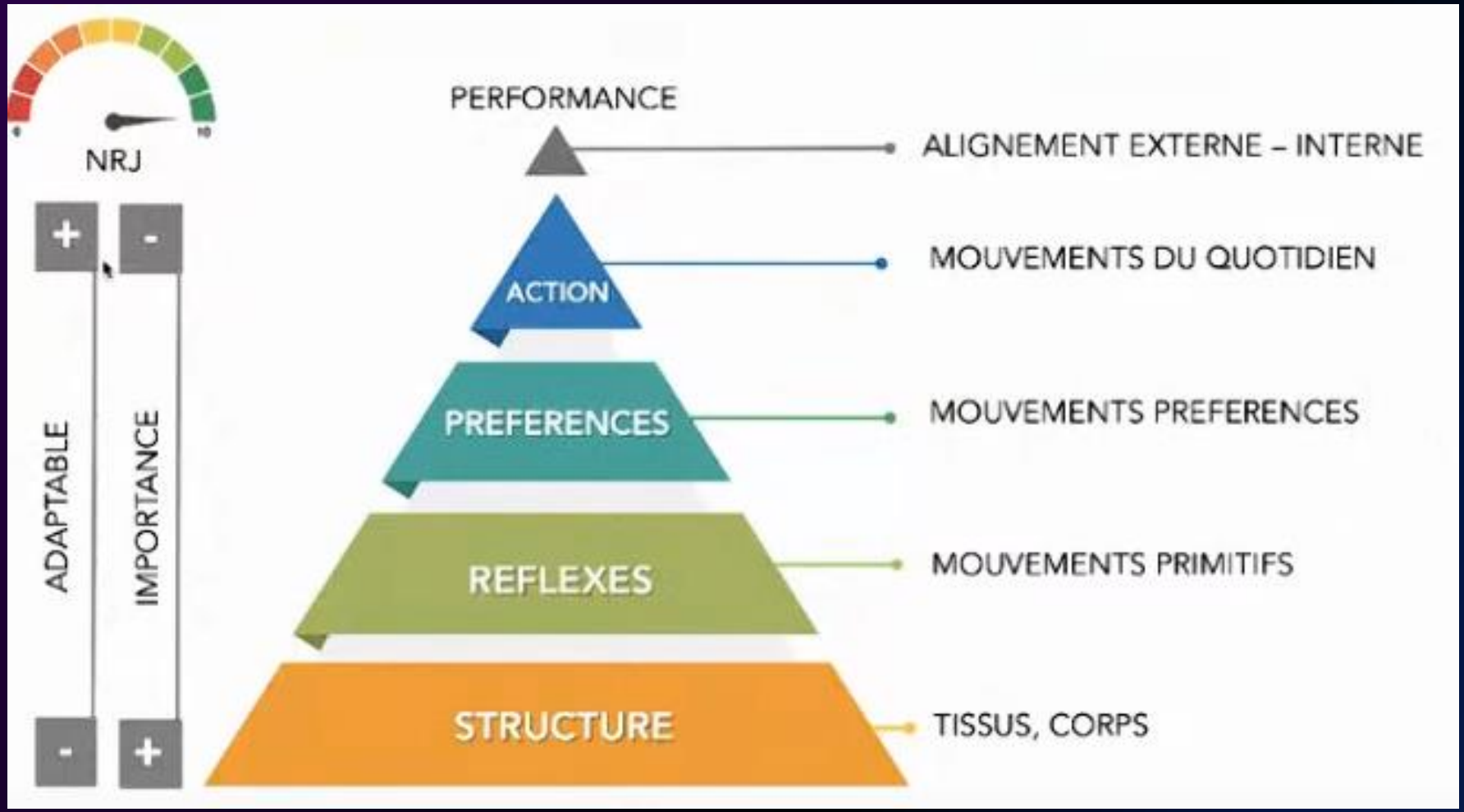
MOTOR PREFERENCES (past)= How athlete's life has created the "how his body wants to perform at this moment" (age, injuries, volume of practice, nutrition...)

CURRENT SITUATION (present) = What is the athlete's energy level and the means at his disposal to increase his performance (time, schedule equipment ...)

GOALS (futur) = What are the goals of the athlete ? Are they realistic ? What plan can be proposed ?

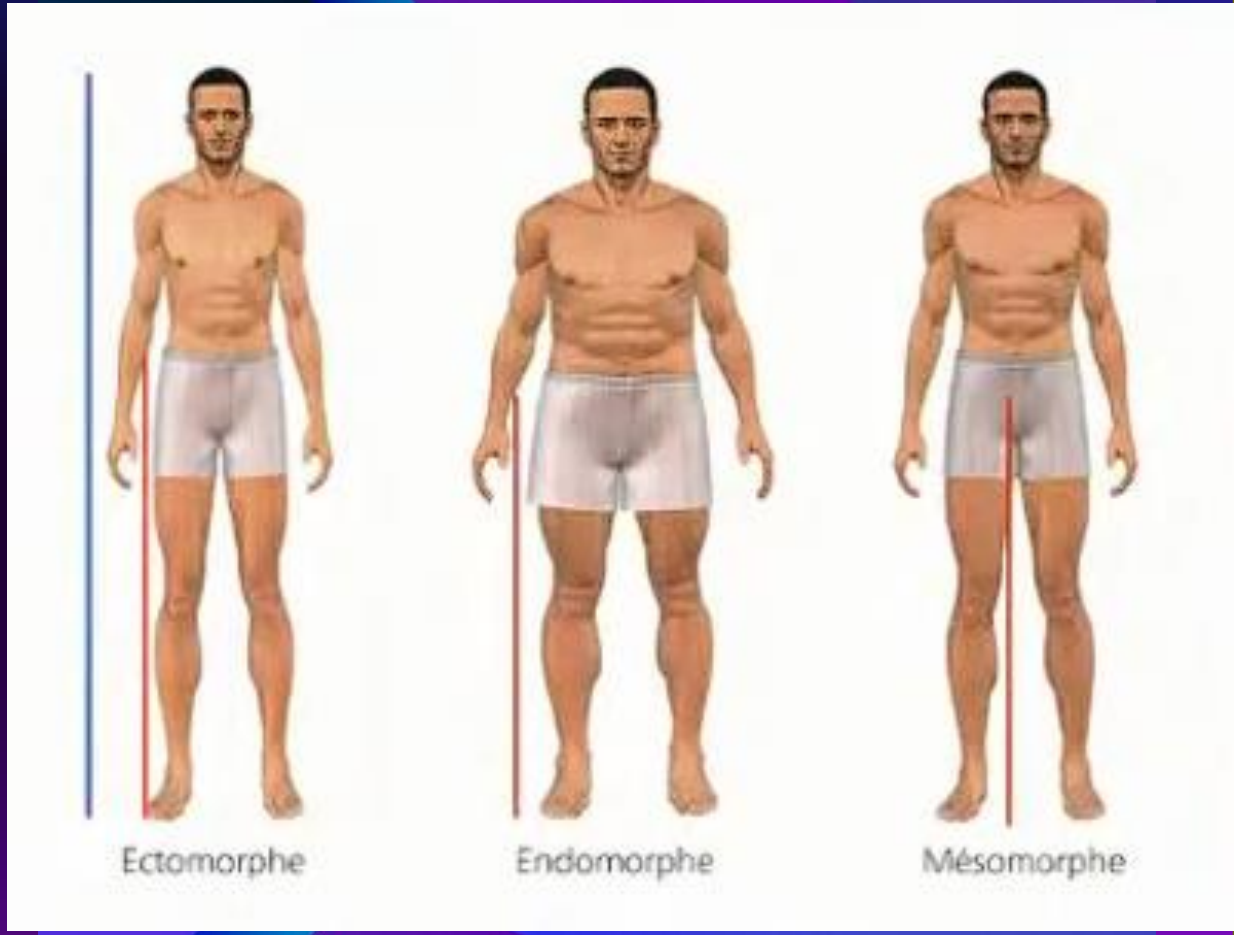
These 3 poles are in interaction and must be in adequacy.

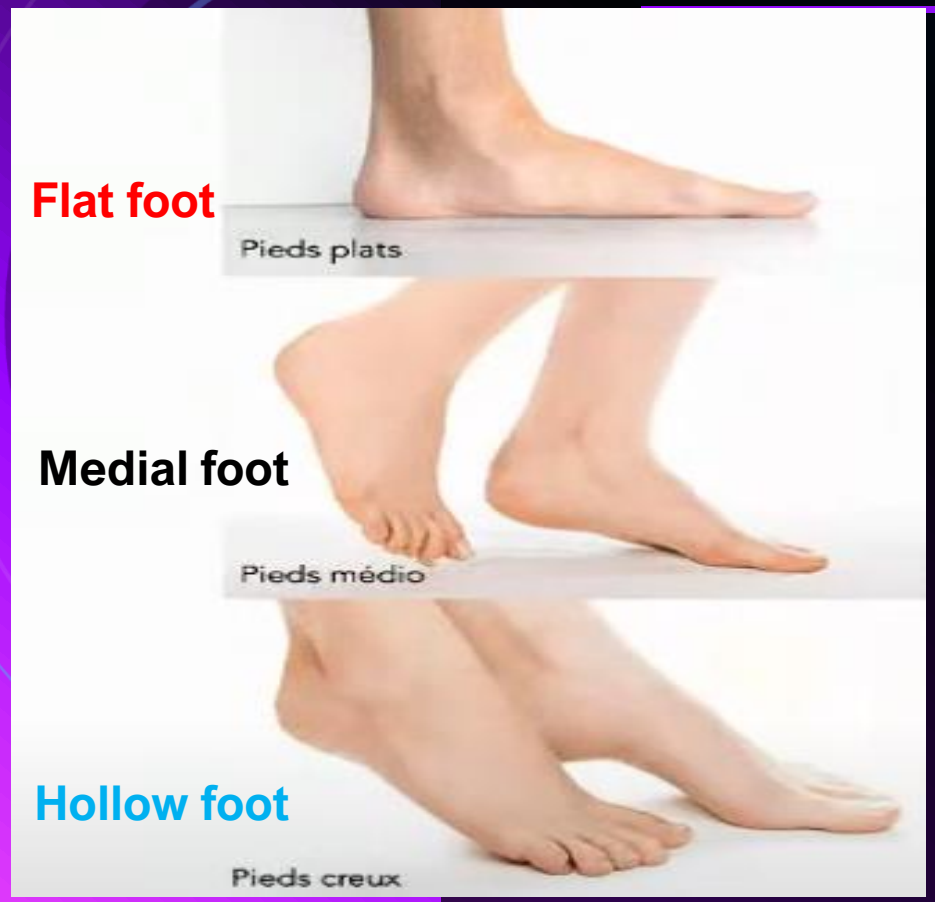
THE MOTOR PREFERENCES ARE ADAPTABLE BUT THE STRUCTURE IS FIXED YOU CAN'T CHANGE THE LENGTH OF THE BONES AND MUSCLES



HIGHT CENTER OF GRAVITY
BETTER CHANCE BE MADE FOR REBOUNDING
A SPRING-MASS SYSTEM

LOW CENTER OF GRAVITY
BETTER CHANCE BE MADE FOR FLEXION
A PULLEY SYSTEM






FLAT FOOT = IN AVERAGE MORE FLEXION
Stick to the ground
Performed better on soft surface
Difficulty on hard surface

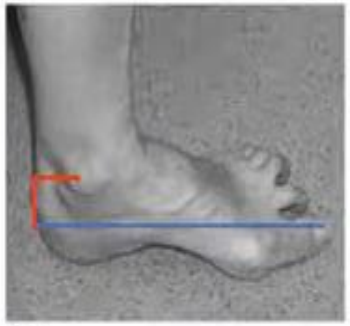
HOLLOW FOOT = IN AVERAGE MORE EXTENSION
FOR SOME ATHLETE MORE EXTENSION +++

Performed better on hard surface
Difficulty on soft surface

## Location ankle bone

1/

2/



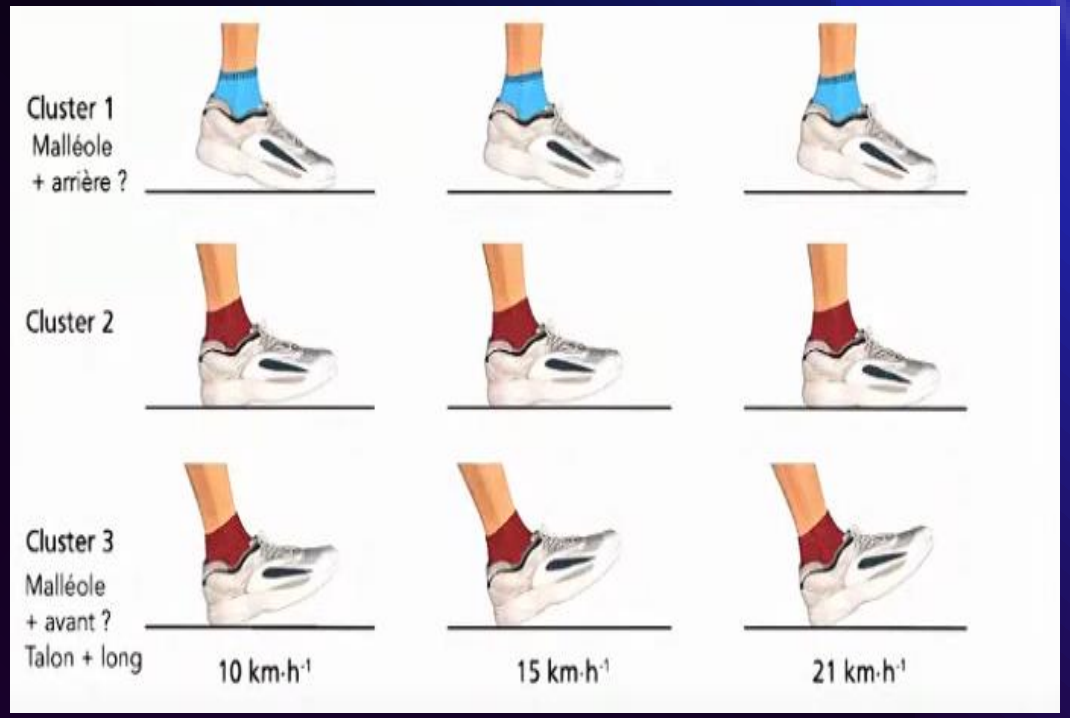
3/

**More back**

**More forward**

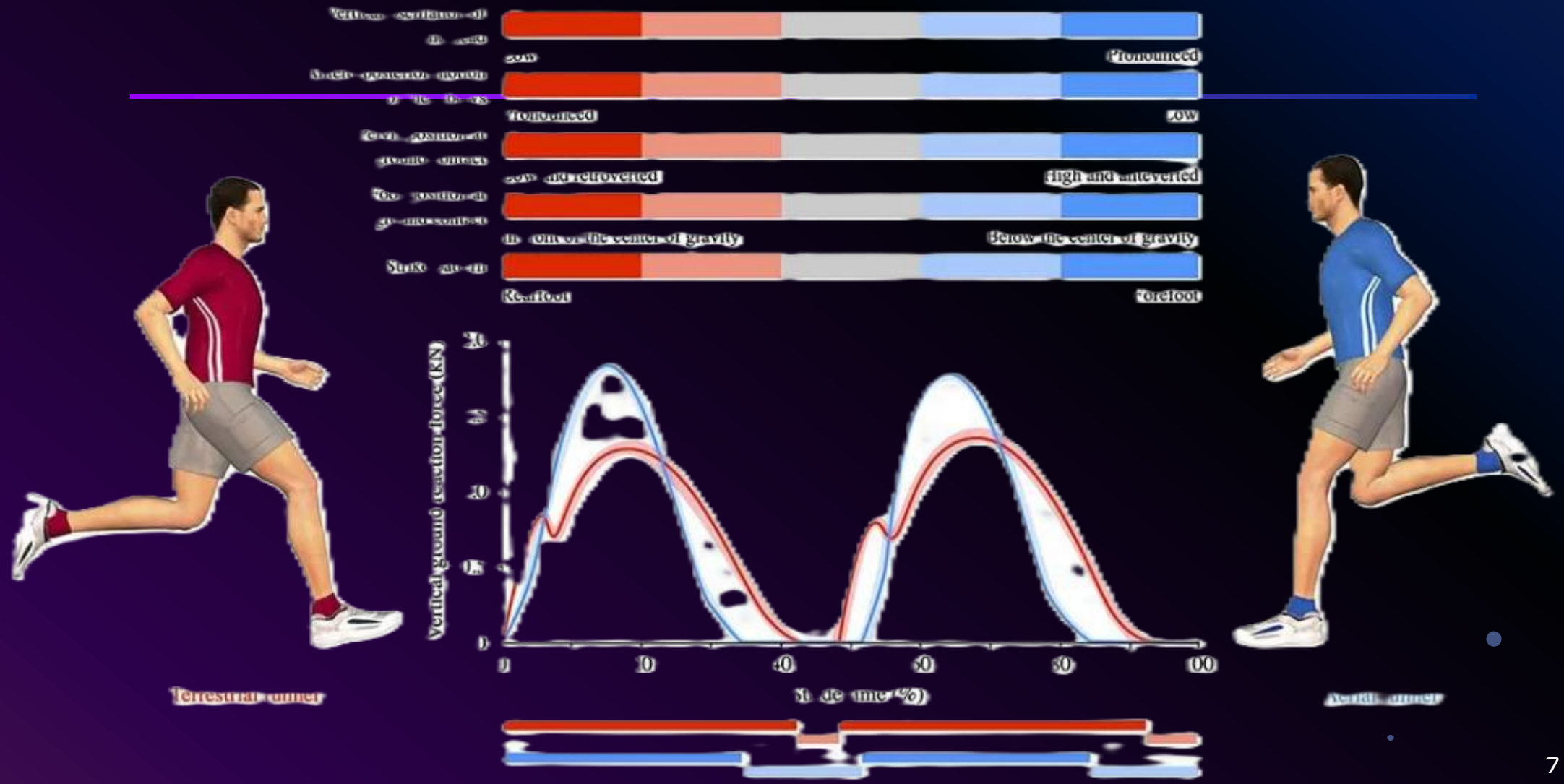

**Normal length of foot**

**Radius of gyration of the foot**
**From left to right**




**SOMETIME THE STRUCTURE CAN GIVE A CLEAR INDICATION OF THE MOTOR PREFERENCES**

# RUNNING PATTERNS ANALYSIS



# FINDING

## AERIAL PATTERN

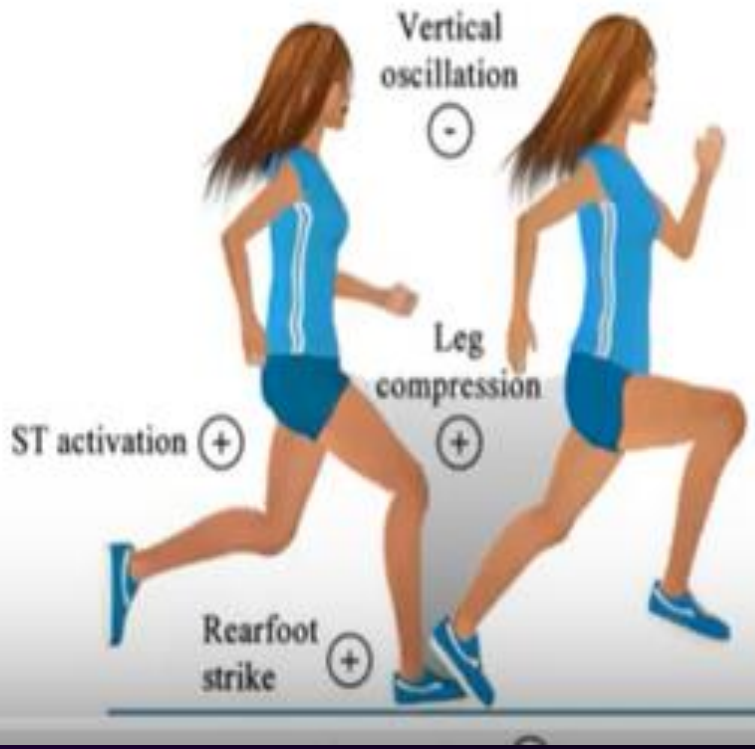
①

Aerial strategy: rebound
Stretch shortening cycle utilization


## GROUNDED PATTERN

②

Terrestrial strategy: rolled all around
Horizontal orientation of force propulsion



# WALKING AND LOADING PREFERENCES


***THE SPRING-MASS SYTEM***

Walk from the top

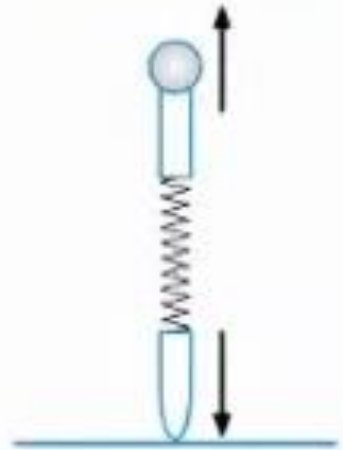
Engage shoulders first

***THE PULLEY SYSTEM***

Walk form the bottom

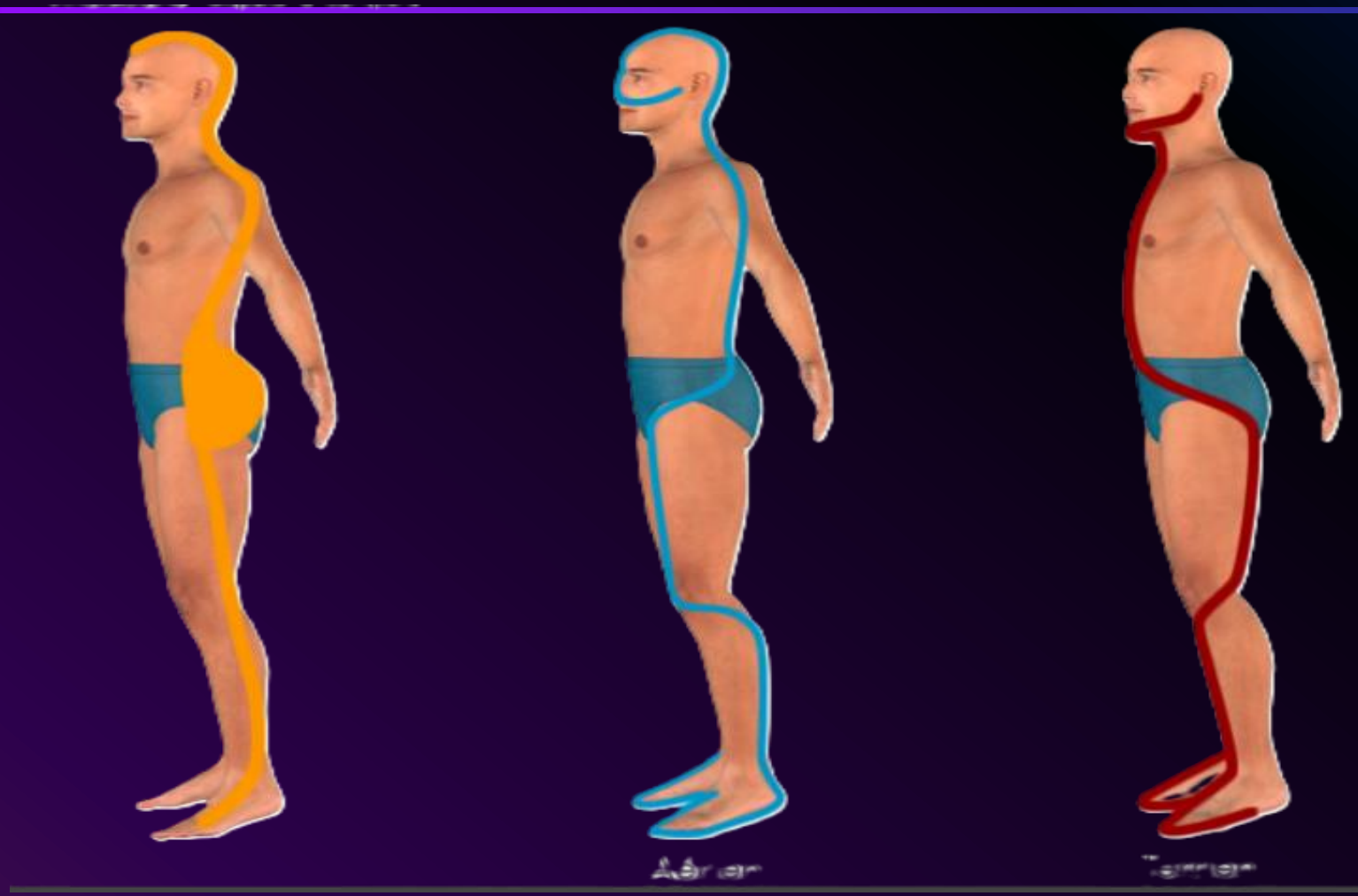
Engage hips first

SPRING MODEL

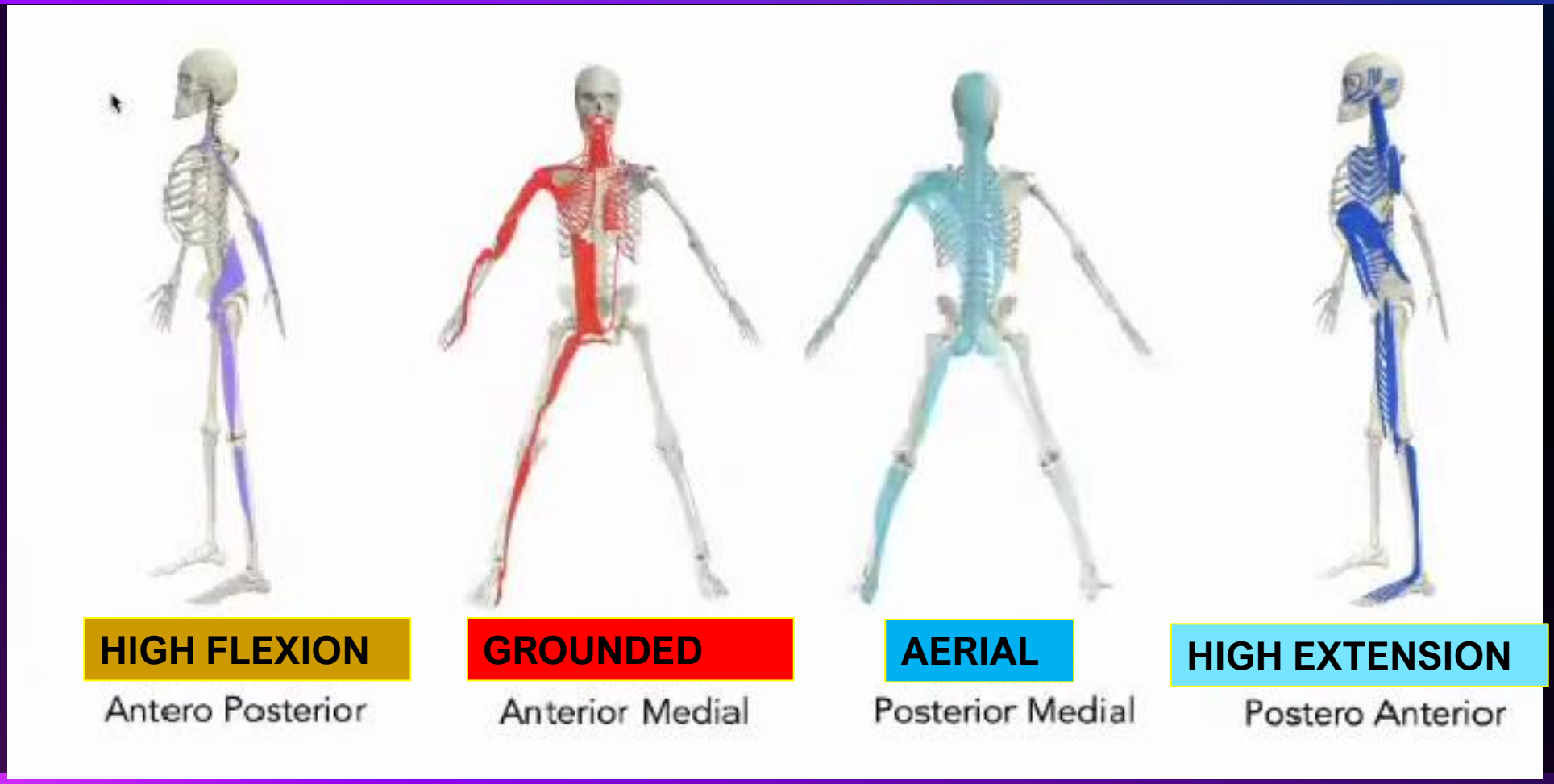


PULLEY SYSTEM

# POSTURE AND STATIC - DYNAMIC BALANCE PREFERENCES



# THE 4 BASIC MUSCLES CHAINS PREFERENCES



# 4 BASIC MUSCLES CHAINS PLAYERS

**PROFILS**

POSTERIAL MEDIAL

ANTERIOR MEDIAL

ANTERIOR POSTERIOR

POSTERIAL ANTERIOR

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# THE 4 BASIC TENNIS PLAYERS PROFILES ALL HAVE A DIFFERENT COORDINATION OF STATIC AND DYNAMIC BALANCE SYSTEM OR PERSONAL SIGN MOTIONS







**GROUNDED DISSOCIATED ANTERO-POSTERIOR CHAIN**

**GROUNDED ASSOCIATED ANTERIOR MEDIAL CHAIN**

**AERIAL DISSOCIATED POSTERIOR MEDIAL CHAIN**

**AERIAL ASSOCIATED POSTERIOR ANTERIOR CHAIN**

# ANTERIOR-POSTERIOR MUSCLES CHAIN MOTRICITY / FLEXION-EXTENSION

- Dissociation between shoulder-hip belt
- Need a fine body motor skills
- Very good control of forearm, wrist, and fingers
- Better control of action when carried out at arm length
- great coordination eye/hand

# ANTERIOR MEDIUM MUSCLES CHAIN MOTRICITY / DOUBLE FLEXION

- Low level of dissociation between shoulders-hips-belt
- Need a full global body engagement in the action
- Work with big body muscles group, trunk and legs
- Better control of action when realized close to the body/less rotation
- Very explosive
- Love quadriceps work

# POSTERIOR- MEDIAL MUSCLES CHAIN MOTRICITY EXTENSION-FLEXION

Dissociation between shoulder- hip belt

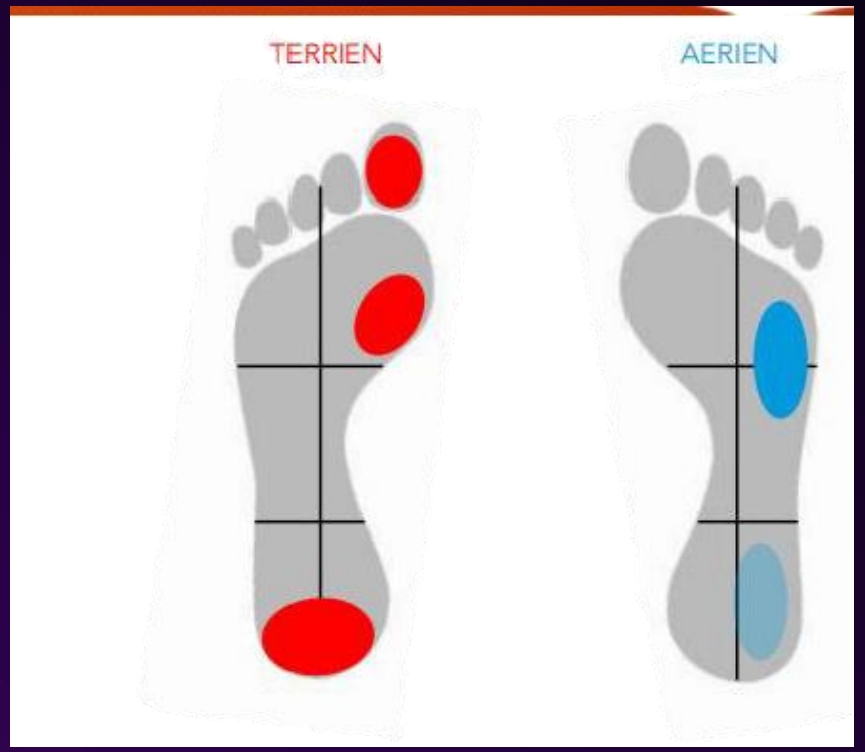
- Need a fine body motor skills
- Very good control of forearm, wrist, and fingers
- Better control of action when carried out at arm length
- Better coordination eye/hand

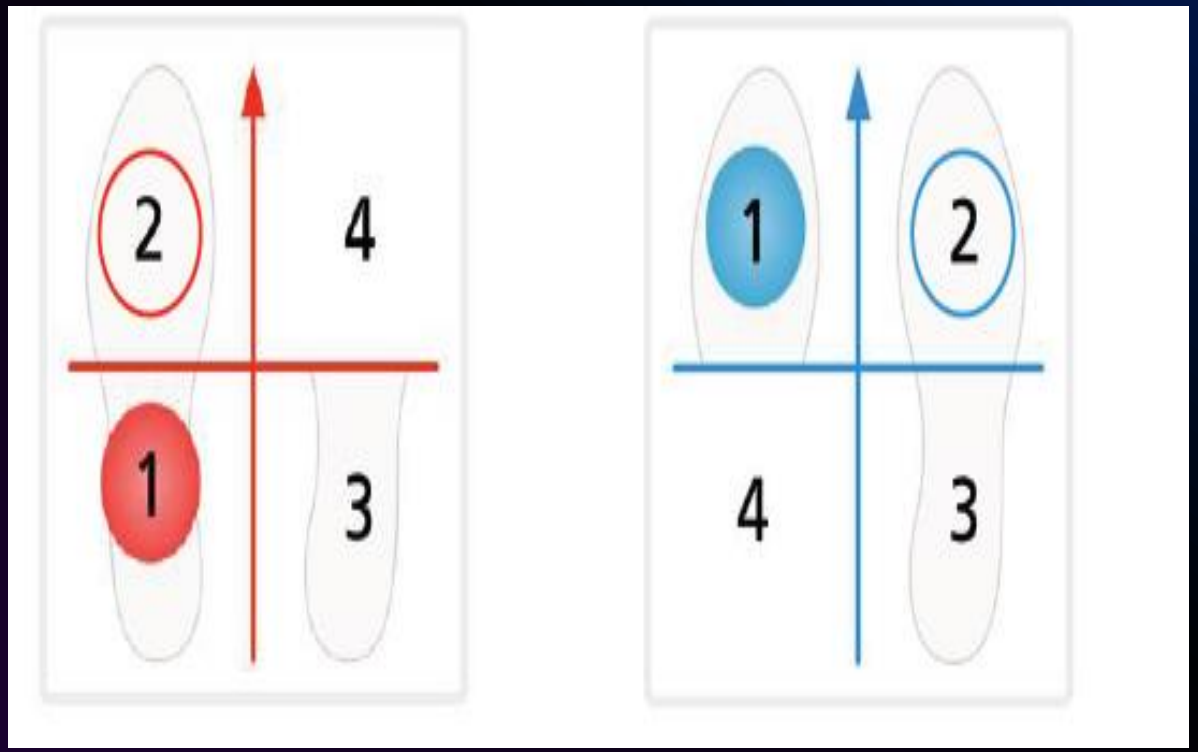
# POSTERIAL-ANTERIOR MUSCLES CHAIN MOTRICITY DOUBLE EXTENSION

- low level of dissociation between shoulders:-hips belt
- Need a concept to guide the movement
- Focus on the mental representation associated with the activ
- Engage the right side of the body in the action
- Love quality work
- Right dominant hip

# FOOT DIAL
# CENTER OF MASS / LOADING POSITIONNING PREFERENCES

**BODY BALANCE**
**WHEN CENTER OF MASS IS PLACED ON FOOT DIAL POSITIONS**



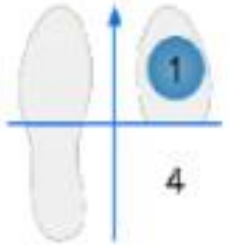

GROUNDED PLAYER **AERIAL PLAYER**

**WHEN C.O.M IS PLACED ON PT 1**
**VERY STRONG BODY STABILITY AND BALANCE**
**ON PT 4 VERY WEAK BODY STABILITY**

# LATERAL BALANCE / FLEXION –EXTENSION LEG

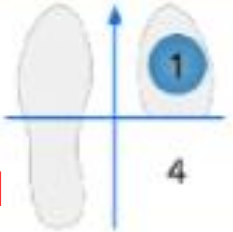

RIGHT LEG
EXTENSION LEG

LEFT LEG
FLEXION LEG

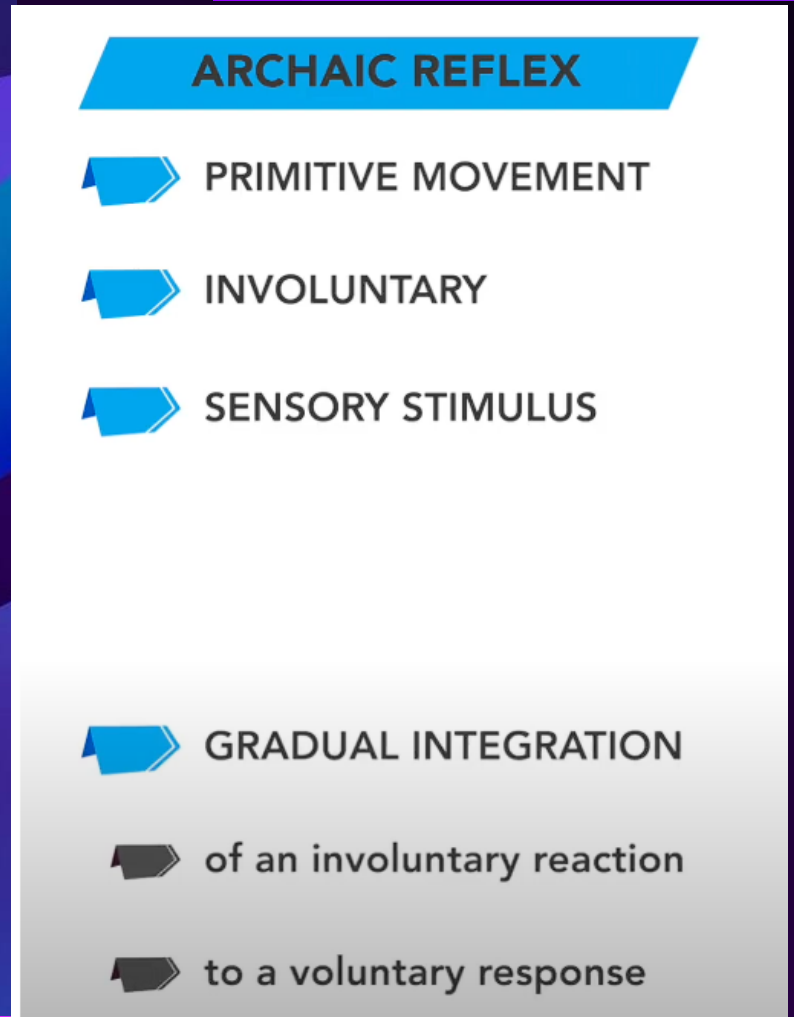




EXTENSION LEG + RIGIDE + REBOUNDING

FLEXION LEG + FLEXIBLE+ FLEXION PROPULSION



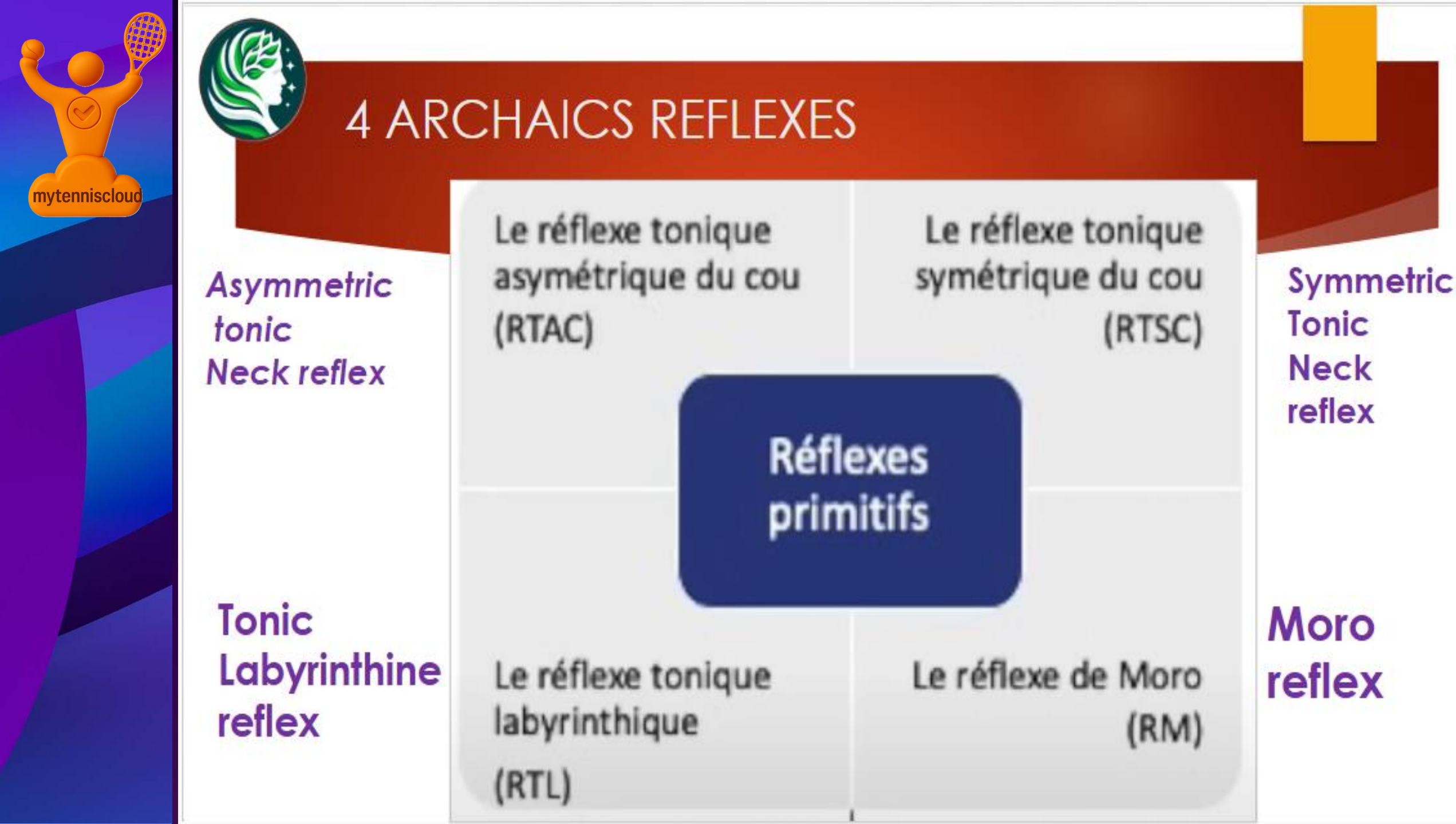
# OFF BALANCE SITUATIONS CAUSES AND ERRORS




***ARCHAICS REFLEXES***

- Are automatic motor patterns present since birth
- They ensure survival and facilitate the motor and postural development
- Normally they get integrated after during 2 first year of life
- *Nonintegrated they can in child and adults can generated balance and coordination* trouble
- Chronic muscles tension
- Motor motions patterns ineffective
- Cognitive overload ( compensation)Muscular and postural pain in adult age

# 4 ARCHAICS REFLEXES




*Asymmetric tonic Neck reflex*

*Symmetric Tonic Neck reflex*

**Tonic Labyrinthine reflex**

**Moro reflex**

# Tonic labyrinthine reflex

## *Initial role*

Set up muscular tone
In the baby

## *Nonvoluntary response*

- Flexion of anterior muscle chain
- Shoulders rolling forward
- Lost of balance

- Extension of posterior muscle chain in arc
- Lost of balance

**RÉFLEXE TONIQUE LABYRINTHIQUE (RTL)**

**RÔLE INITIAL**

Mise en place du tonus musculaire chez le nourrisson

**RÉPONSE INVOLONTAIRE**

**Flexion** : hypotonus chaîne antérieure, enroulement des épaules vers l'avant, perte de l'équilibre

**Extension** : hypertonus chaîne postérieure, extension du corps en arc, perte de l'équilibre

# Asymmetric tonic neck reflex

## *Initial role*

- Left - right body segments coordination in the baby

## *Involuntary response*

- Arms displacement on homolateral of the rotation

**RÉFLEXE TONIQUE ASYMÉTRIQUE DU COU (RTAC)**

**RÔLE INITIAL**

Coordination segmentaire droite / gauche chez le nourrisson

**RÉPONSE INVOLONTAIRE**

Déplacement des bras du côté homolatéral à la rotation

# Symmetric tonic neck reflex

## RÉFLEXE TONIQUE SYMÉTRIQUE DU COU (RTSC)

*Initial role*

Upper-lower body segments coordination in the baby

*Involuntary response*

- Flexion:

Upper body segments and extension of lower body segments

- Extension

Of upper body segments and flexion of lower body segments

**RÔLE INITIAL**

Coordination segmentaire haut / bas chez le nourrisson

**RÉPONSE INVOLONTAIRE**

**Flexion** : Flexion des membres supérieurs et extension des membres inférieurs

**Extension** : Extension des membres supérieurs et flexion des membres inférieurs

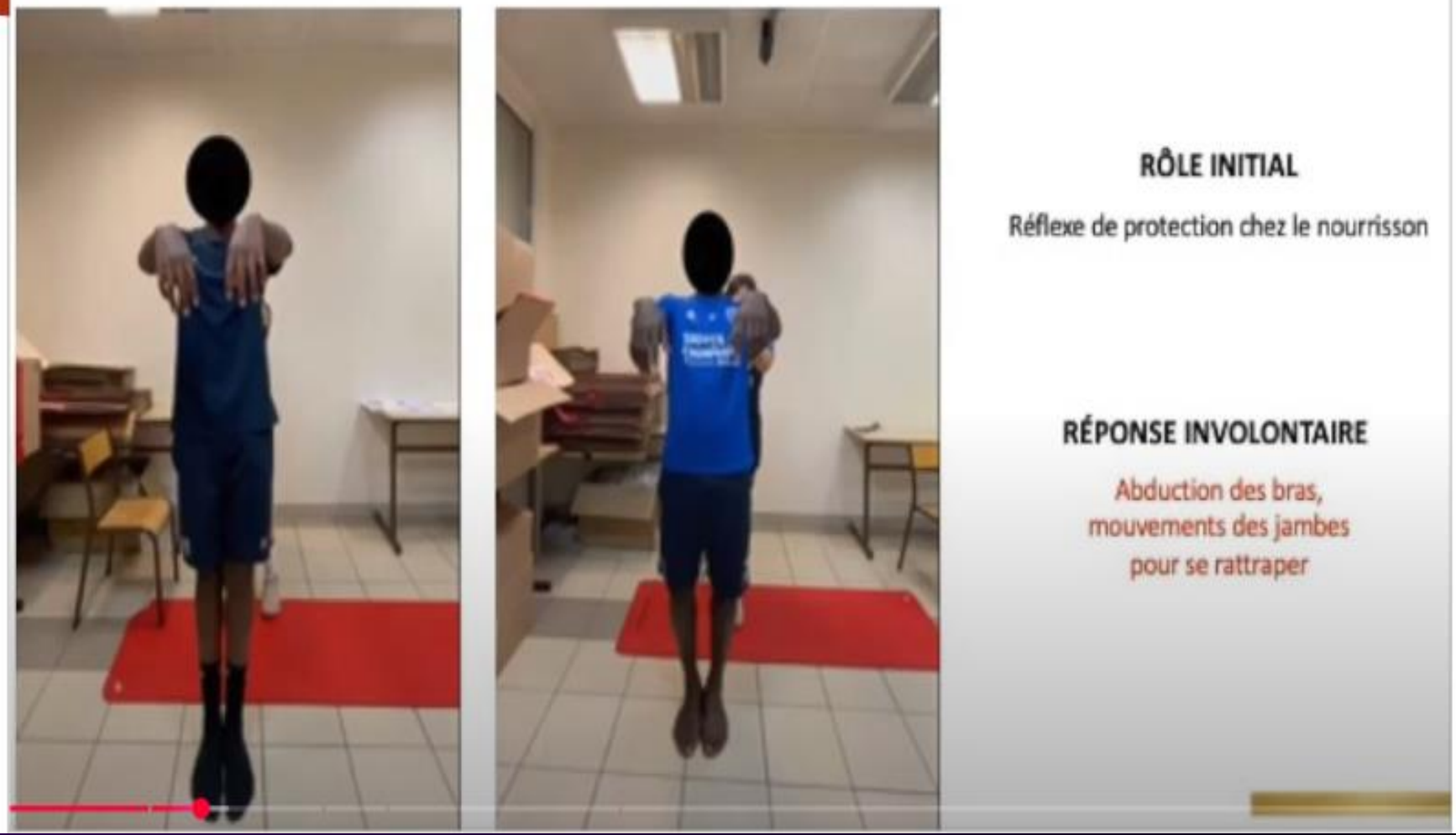
# MORO REFLEX

*Initial role*

Protective reflex in the baby

*Involuntary response*

- Arm Abduction
- legs move to Re-balance




MELBOURNE

# 1 MAIN ERROR/ NON-RESPECT OF MY SYSTEM

**WRONG INTENTION–ACTION**

**IM GROUNDED AND I WAN TTO PLAY LIKE AN AERIAL PLAYER WITH REBOUNDING / EXTENSION VERTICAL**

Schwartzman

Federer

mytenniscloud

# 1 MAIN ERROR
# NO RESPECT INTENTION-ACTION
# COMEBACK IN MY SYSTEM

I'M AERIAL
I'M LIGHT
I FLY
I JUMP
NEED
EXTENSION


I'M
GROUNDED
I LIKE TO
ANCHOR
AND FLEX MY
HIPS DOWN
NEED FLEXION

# 2 MAIN ERROR / I TEND TO PLAY IN MY FOOT DIAL POINT 4

Pt = VERY STRONG

PT 4 = VERY WEAK

THE POINT 4 IS THE POINT WHERE I WILL BE IN DIFFICULTY SPECIALLY IN DEFENSE SITUATION ,OFF BALANCE ON THE LEFT FRONT ,ON THE BACKHAND SHORT CROSS COURT POSITION.


***IF CATCHED IF MY PT 4***

1 JUST PLAY SAFE SHOT
2 TRY USE FOOTWORK TO REPOSITIONNE IN PT 1 OR 2

-CUT THE ANGLE OF THE OF THE BALL
- OR
-MOVE QUICKLY BACKWARD AND ADJUST YOUR FEET

# 2 MAIN ERROR TYPE
# OVER FLEXION

## OBSERVATION ON THE COURT

MEDVEDEV TYPE
AERIAL BUT WITH
OVERFLEXION REFLEXES

- TOO MUCH FLEXION
- PLAY MORE BACKWARD
- EXCELLENT DEFENDER
- WITHDRAWAL REFLEX
- OVERFLEXION REFLEXE

# 3 MAIN ERROR TYPE
# OVER EXTENSION / GROUNDED PLAYER
# OVERSTRIDING

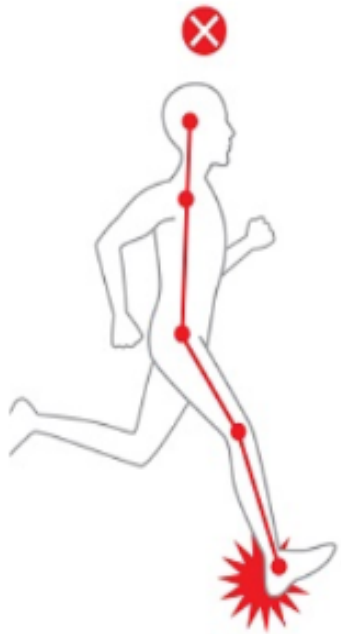
OVER EXTENSION CAN COME FROM OVER EXTENSION REFLEXES

- FEET AND TOES
- NECK
- HANDS

- OBSERVATION
- IN OPEN STANCE FOREHAND
- WHEN START TO PROPULSE WE CAN OBSERVE THE HEAD MOVE BACKWARD

THE PLAYER IS NOW ON THE HEEL ON THE FOOT AND IN UNBALANCE SITUATION

- THERE IS A TECHNICAL ERROR BY OFF BALANCE BACKWARD POSTURE
- GROUNDED PLAYER FORGOT TO GENERATE TRIPLE FLEXION




- OVER STRIDING : THE GROUNDED PLAYER ATTACK THE GROUND WITH KNEE COMPLETELY EXTENDED
- LOST OF BALANCE AND CONTROL

# 2 ERROR OVER EXTENSION GROUNDED PLAYER

SIDE/BREAK FEET ERROR
IN OPEN STANCE FOREHAND ON LATERAL MOVEMENT
THE PLAYER LOAD THE FEET BUT THE FEET GO TO AN EXTERNAL SUPPORT POSITION
AND PLAYER CAN'T CONTROL THE HIP ROTATION
FEET GO IN SUPINATION / NO HIP SUPPORT

CAN BE SAME ON BACKHAND SIDE
WHEN FRONT LEG DO HEEL-TOE EXTENSION

# ERROR OVER EXTENSION FOR AERIAL PLAYER

## OBSERVATION

- ON THE TIP TOES
- TOO EARLY ON TIPTOES
- ON TIP TOES WHEN HIT
- HEAD MOVE BACKWARD WHEN HIT
- FEEL LACK OF POWER
- OVER EXTENSION REFLEXES

# THANK YOU AND QUESTION TIME