



# MODULE 6

# TENNIS SERVE

# + RETURN

# PREFERENCES

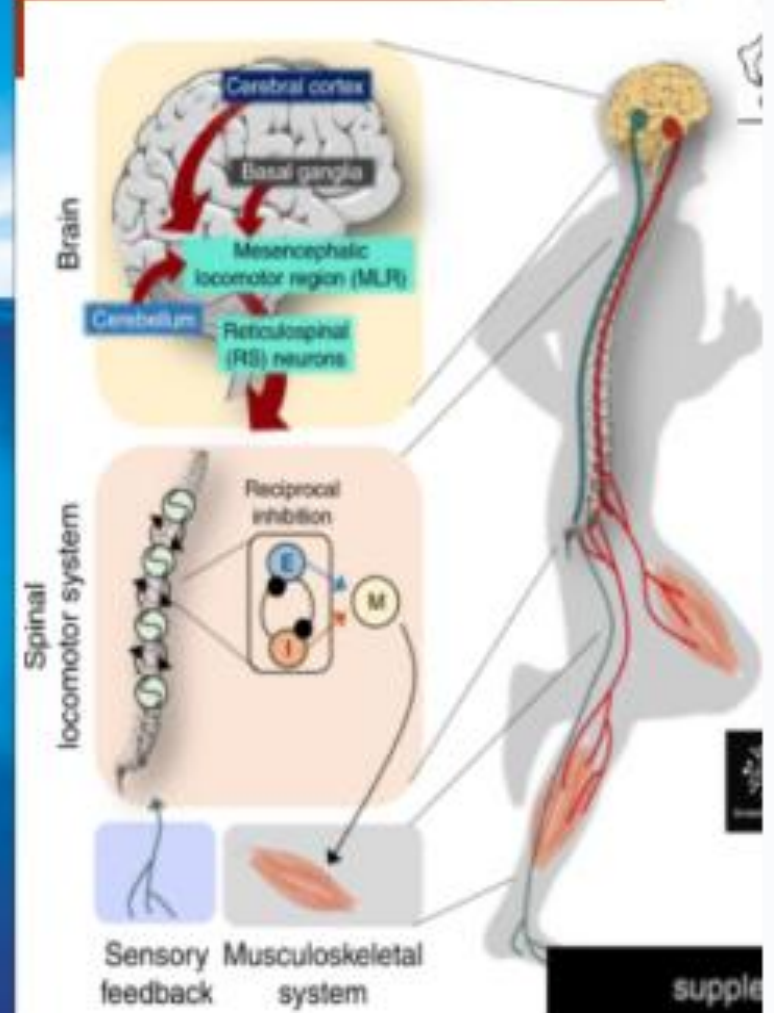
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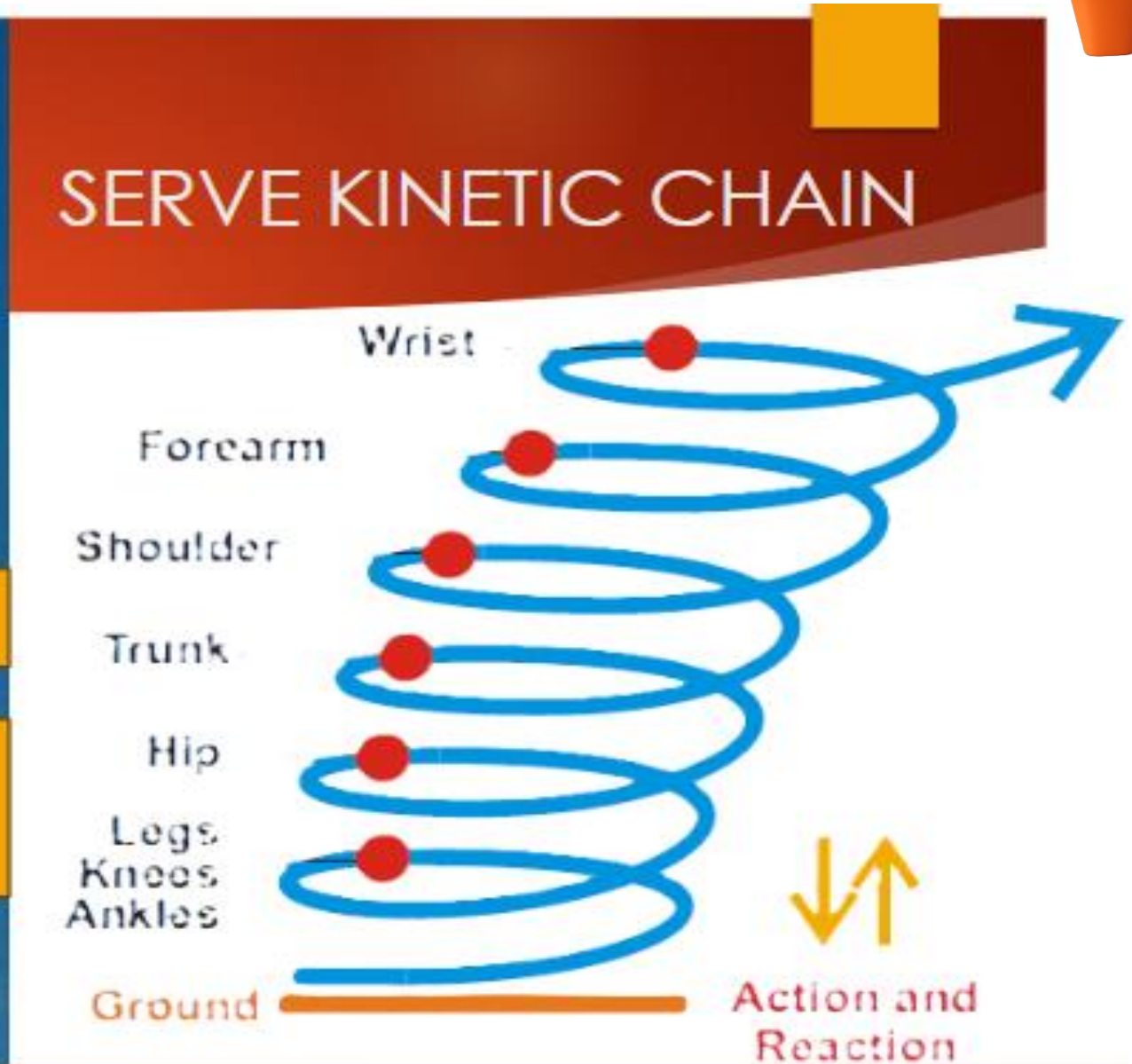
# MOVEMENTS ANALYSIS AND MOTORS PREFERENCES

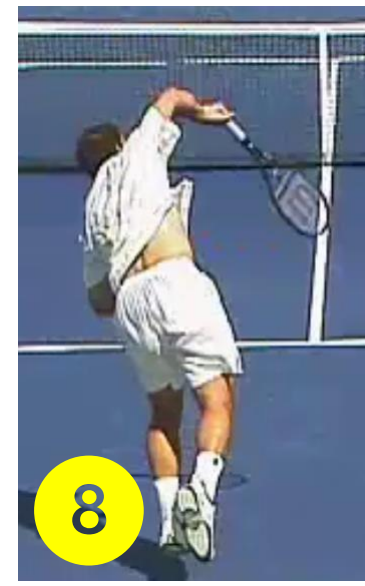
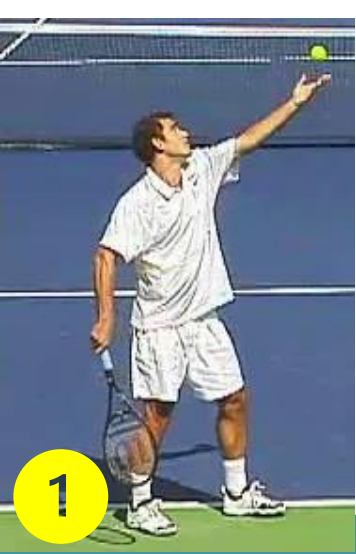
- THE HOW/ THE RESULTS
- BIOMECHANICS
- DATA

- THE WHY/ THE CAUSE
- BODY MOTORS MOTIONS PREFERENCES
- COGNITIVES PREFERENCE



# SERVE SPEED ANALYSIS





## THE 9 KEY'S DYNAMIC MOTIONS OF THE SERVE

- 1 ORIENTATION-RELEASE
- 2 CHARGE (loading -triple flexion))
- 3 DROP (leg drive -triple extension)
- 4 TRUNK ROTATION
- 5 FINAL ACCELERATION(hand feelings)
- 6 IMPACT POINT
- 7 EXTENSION(clean contact)
- 8 FULL EXTENSION( long axis rotation)
- 9 DECELERATION-FINSIH



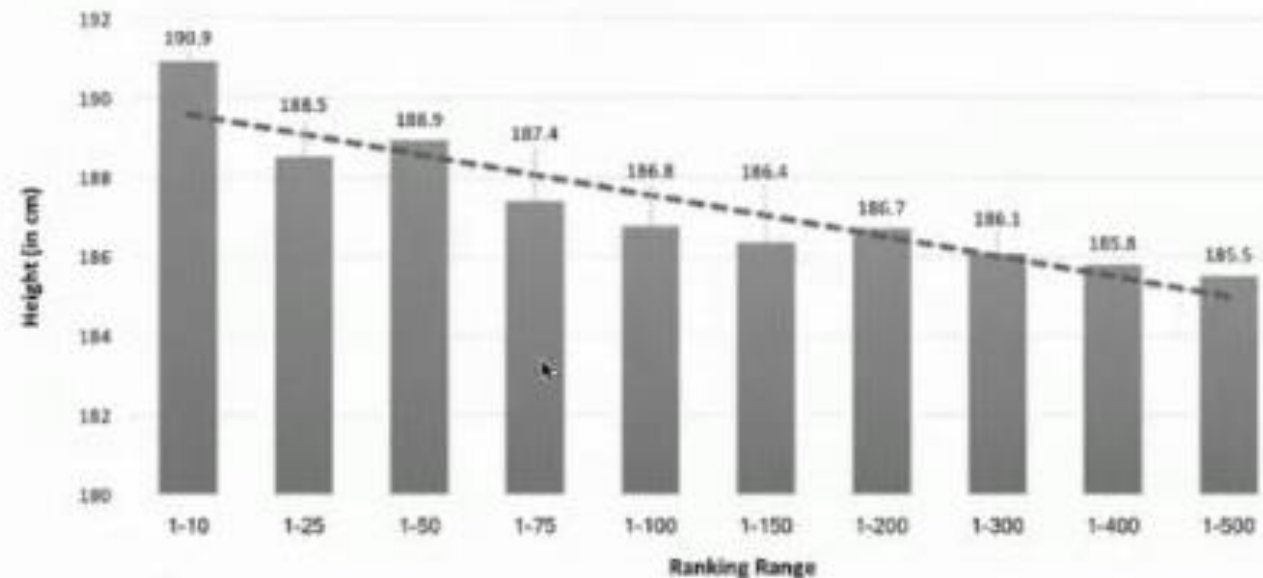
# EFFECT OF BODY ANATOMY ON THE SERVE



Quels avantages, quels inconvénients à être grand ?

Nov 2018 : calcul de la moyenne pondérée sur les 60 derniers grand.

Un vainqueur de GC mesurait en moyenne 186.25 cm (Entre 175 cm pour Gaudio et 198 cm pour Cilic et Del Potro). Contre 178 cm pour la moyenne de la population mondiale.

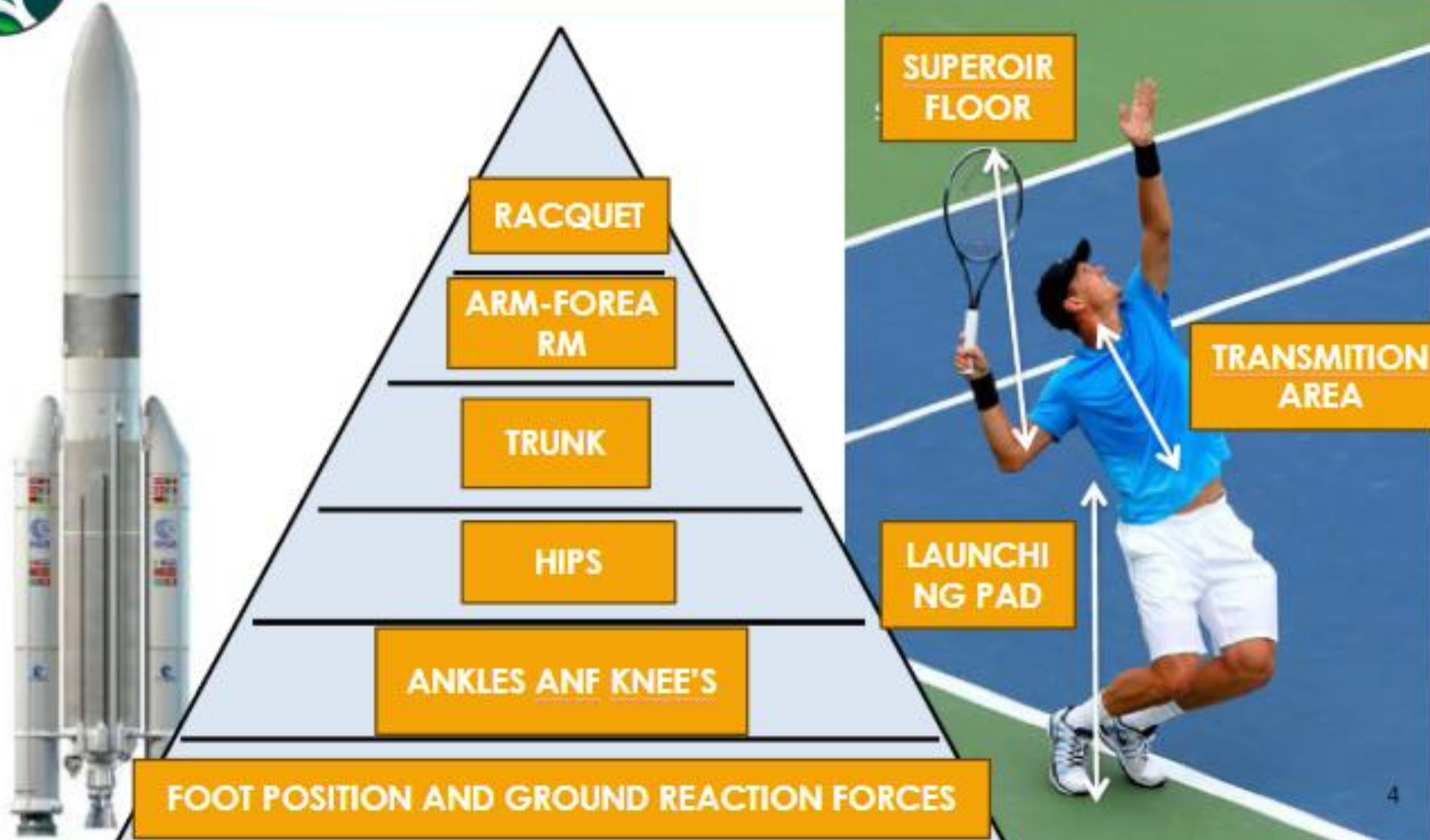


# SERVE KINETIC CHAIN

IT SHOW US THE HOW  
BUT  
NOT THE WHY ?



## SERVE KINETIC CHAIN

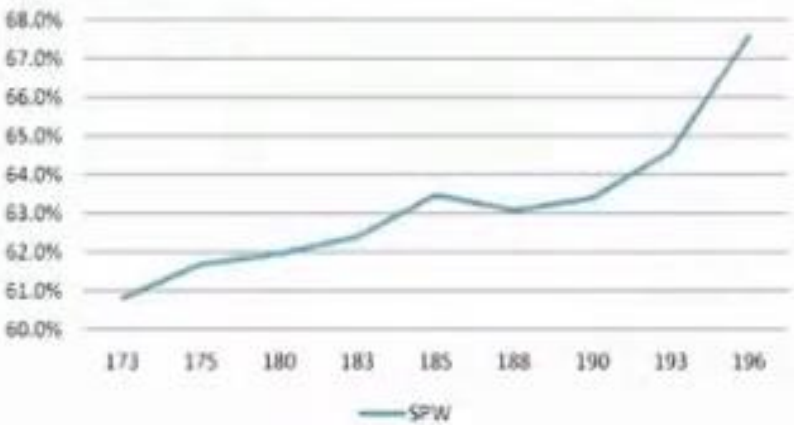


# SERVE RESULTS ANALYSIS

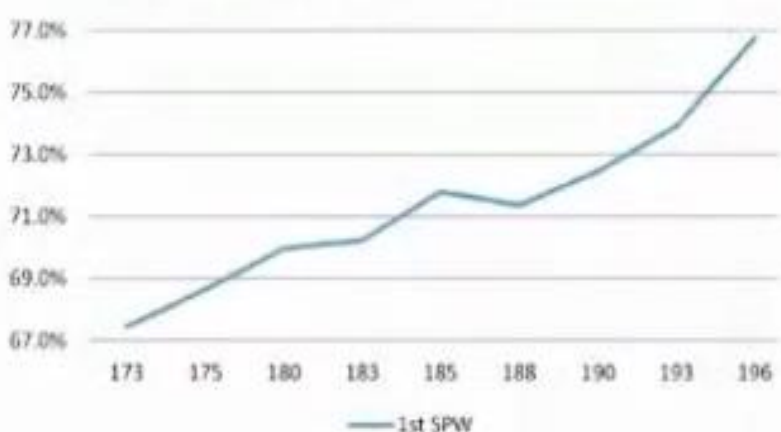


Quels avantages, quels inconvénients à être grand ?

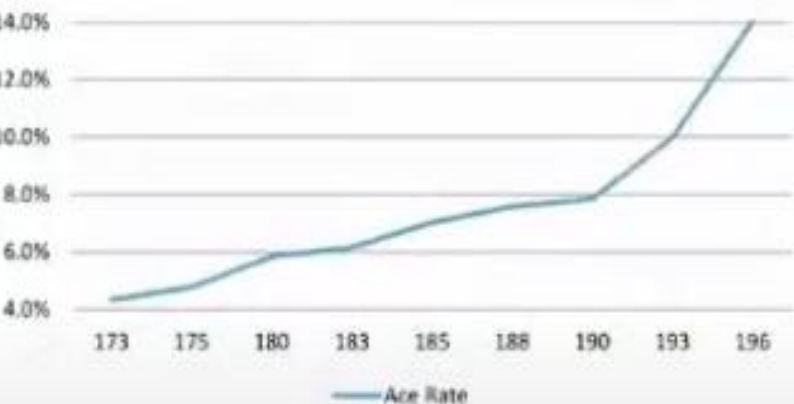
Pourcentage premier service / taille



Pourcentage échanges gagnés sur premier service / taille



Pourcentage ace-service / taille



Pourcentage échanges gagnés sur second service / taille



# SIZE AND BODY SEGMENTS



J ISNER  
LENGTH IN INCHES  
ARM : 9,54  
FOREARM: 12,06  
TOTAL : 21.06

SCHWARTZMAN  
ARM :5,87  
FOREARM :8,55  
TOTAL: 14.42

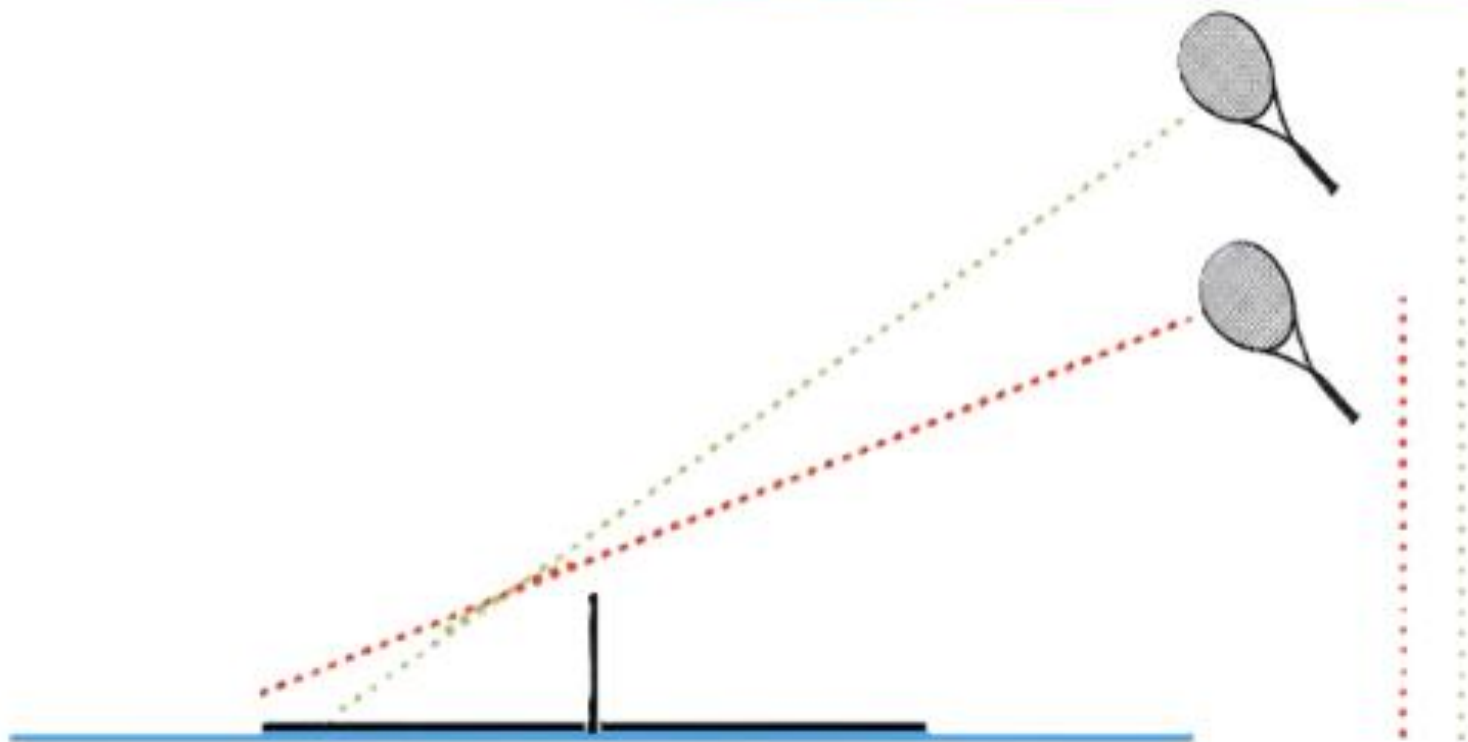


THE LONGER THE LEVERS ARE THE FASTST  
PLAYER CAN SWING GER THE  
SPECIALLY THE FOERAM LENGHT

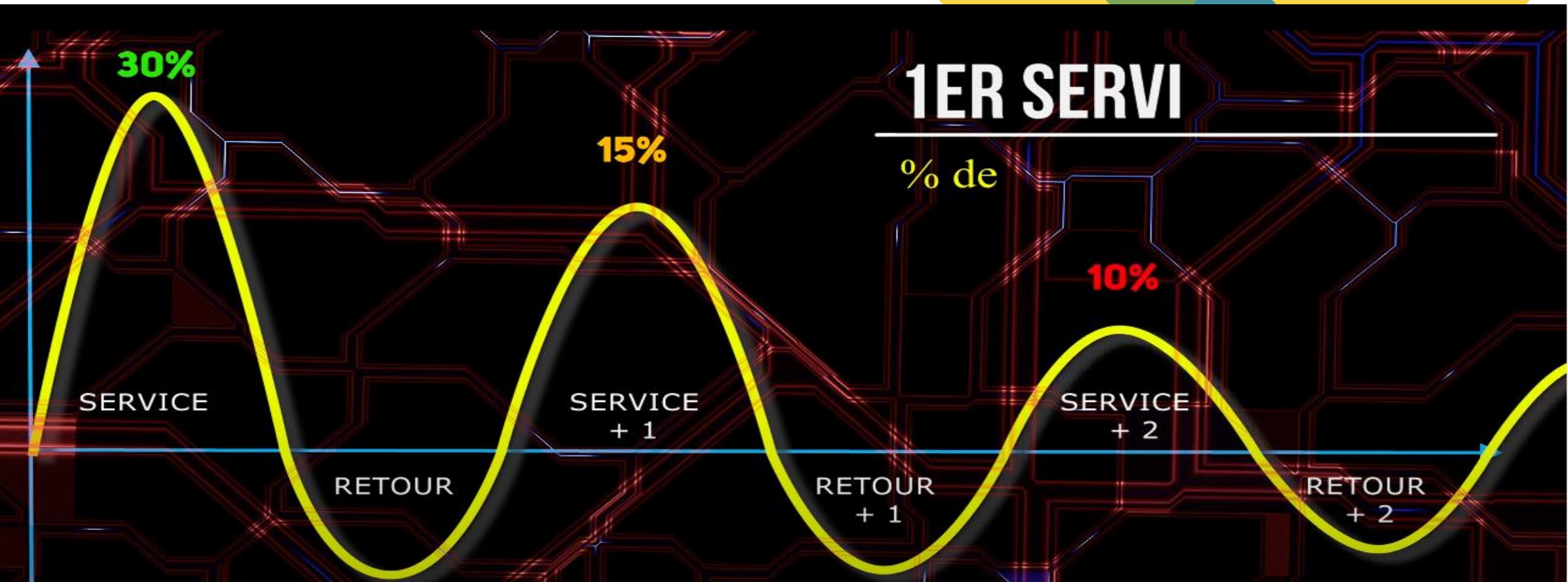


# SERVE MOTOR PREFERENCES

## impact height



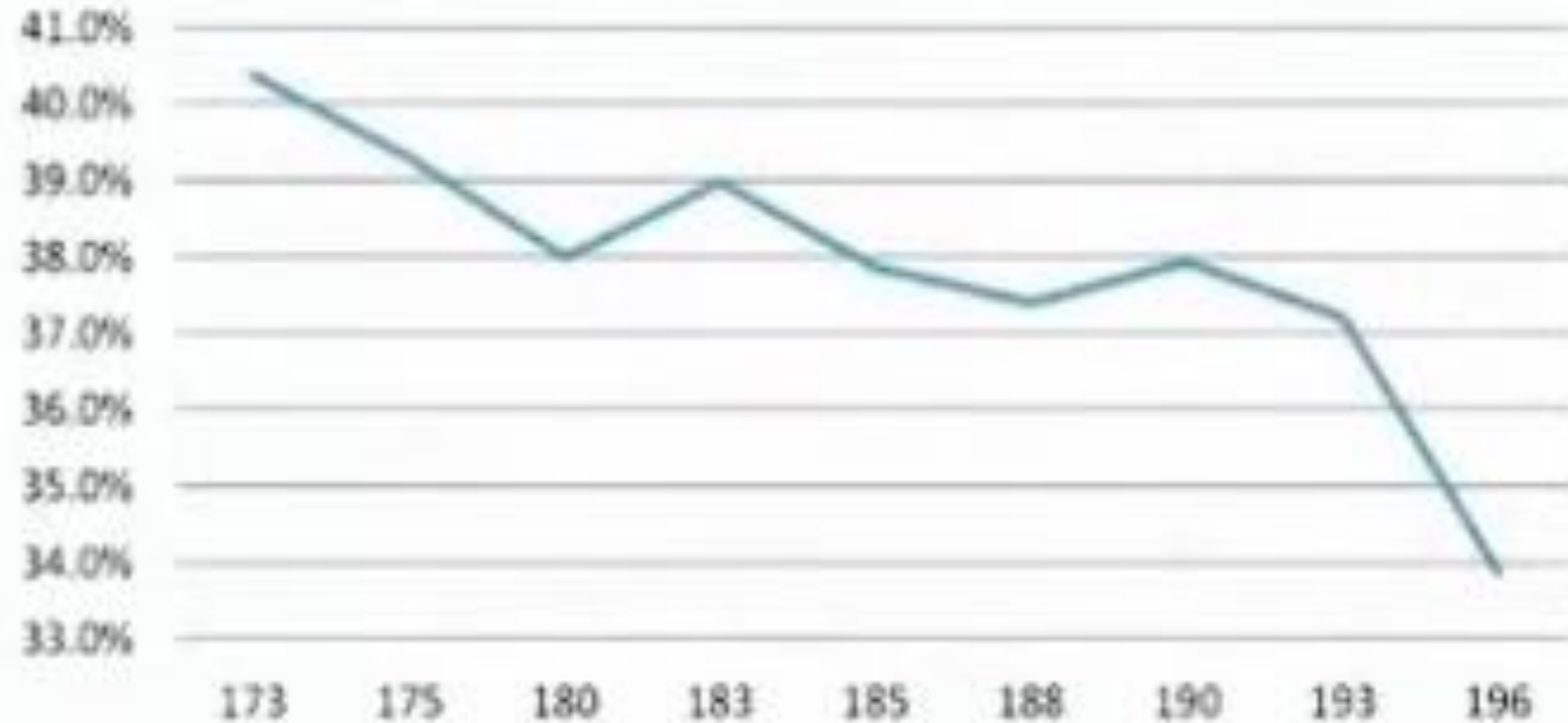
# SERVE AFTERSCHOCK WAVE



# ANATOMY AND RETURN OF SERVE STATS



Pourcentage échanges gagnés au retour / taille



www.sidestreamanalytics.com





# SERVE AND MOTOR PREFERENCES

energy



## ENERGY STRATEGY

-HIPS/ **FEET**

MOBILE POINT

D 8

VOICE TONE

SLOW , CALM

WORDS

- TRIPLE FLEXION
- ANCHORING
- FEEL STRONG
- PUSH OFF
- PROPULSION



## ENERGY STRATEGY

\_Shoulders

- Ankles

- Mobil point

L5

Voice tone

- Dynamic, fast
- Words
- Tall ,high
- Quick, speed
- Impulse, jump

# STANCES AND PREFERENCES



- AERIAL
- ASSOCIATED
- AXIAL
- LEFT EYE

- GROUNDED
- ASSOCIATED
- LARGE
- RIGHT EYE

- AERIAL
- DISSOCIATED
- LARGE
- RIGHT EYE





# SERVE STANCES %



Appuis écartés



Relais d'appuis

Roland Garros (2007)

30 % des joueurs

70 % des joueurs

20 % des joueuses

80 % des joueuses

En club

< 10 % des joueuses

> 90 % des joueuses





# SERVE AND MOTOR PREFERENCES

## power line



CREATED A FORCE LINE

1 BACK FOOT UNDER BACK SHOULDER

2 HELP HIPS DIFFERENTIATION

3 HELP SHOULDER OVER SHOULDER  
ROTATION

4 HELP ENGAGING THE TRUNK ROTATION



# SERVE AND MOTOR PREFERENCES

## legs impulse- push off



BACK LEG/ HIP

BACK FOOT POSITION

TRIPLE FLEXION

SPEED OF TRIPLE

EXTENSION

+++

EXPLOSIVE PROPULSION



FRONT LEG/ HIP

ANCHORED / STABILITY

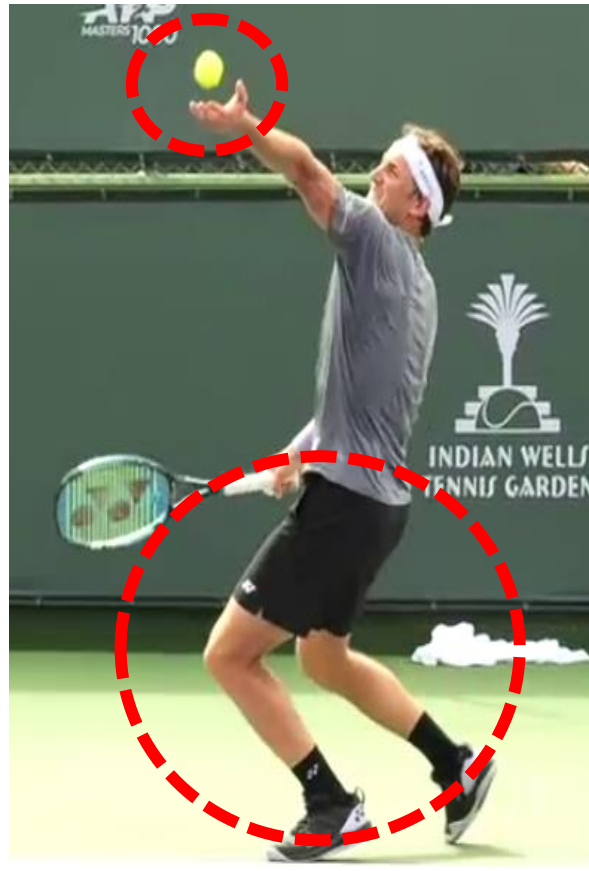
SOLID STABLE POINT / FIXATION

PROPULSION +

- **TIMING OF 3 M MOTIONS**
  - max apex-ball
  - max triple flexion –charge
  - max external shoulder rotation



## GROUNDING

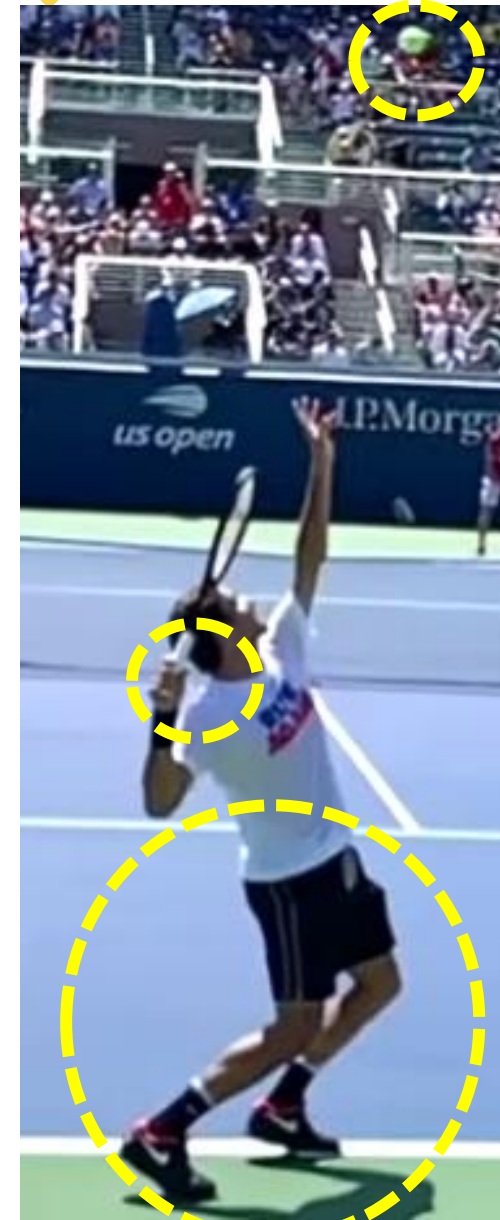


## AERIAL



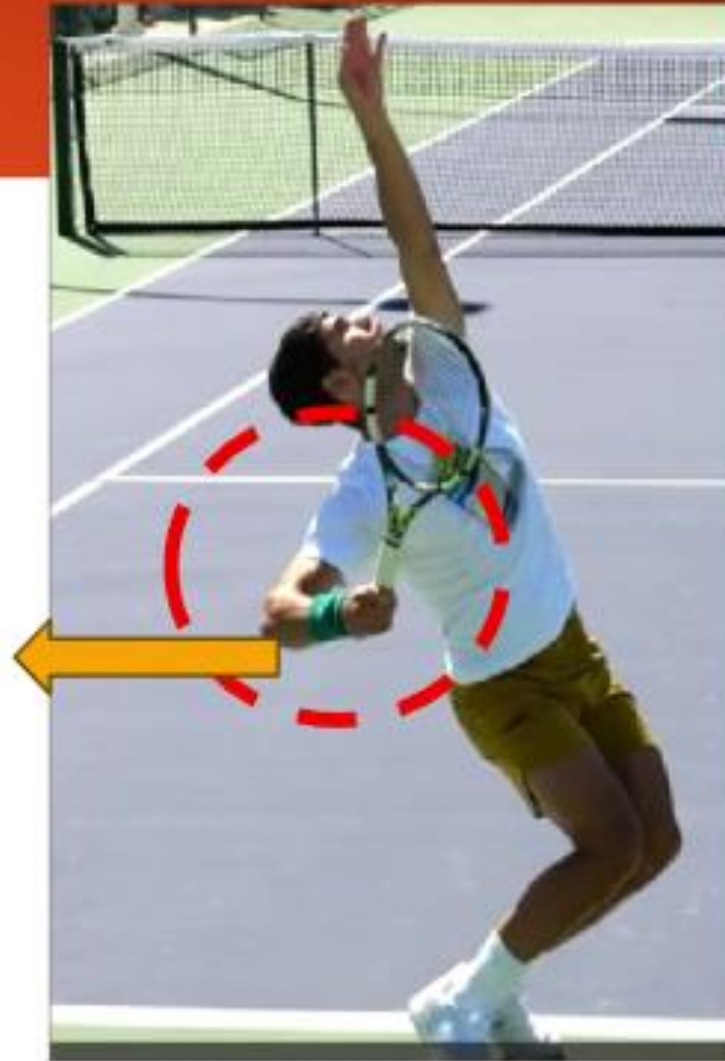
AERIAL PLAYERS TEND TO START THE TRIPOLE FLEXION MOTION AFTER THE BALL RELEASE

GROUNDING PLAYERS TEND TO START THE TRIPLE FLEXION MOTION BEFORE THE BALL RELEASE





# AXIAL – LARGE PREFERENCE



# SERVE TRIPLE FLEXION OBSERVATIONS-KNEES SHAPES



SERVE MOTOR PREFERENCES  
knee flexion



**GROUND  
ED  
LARGE**



**GROUND  
ED  
AXIAL**



**AERIAL  
LARGE**



**AERIAL  
AXIAL**



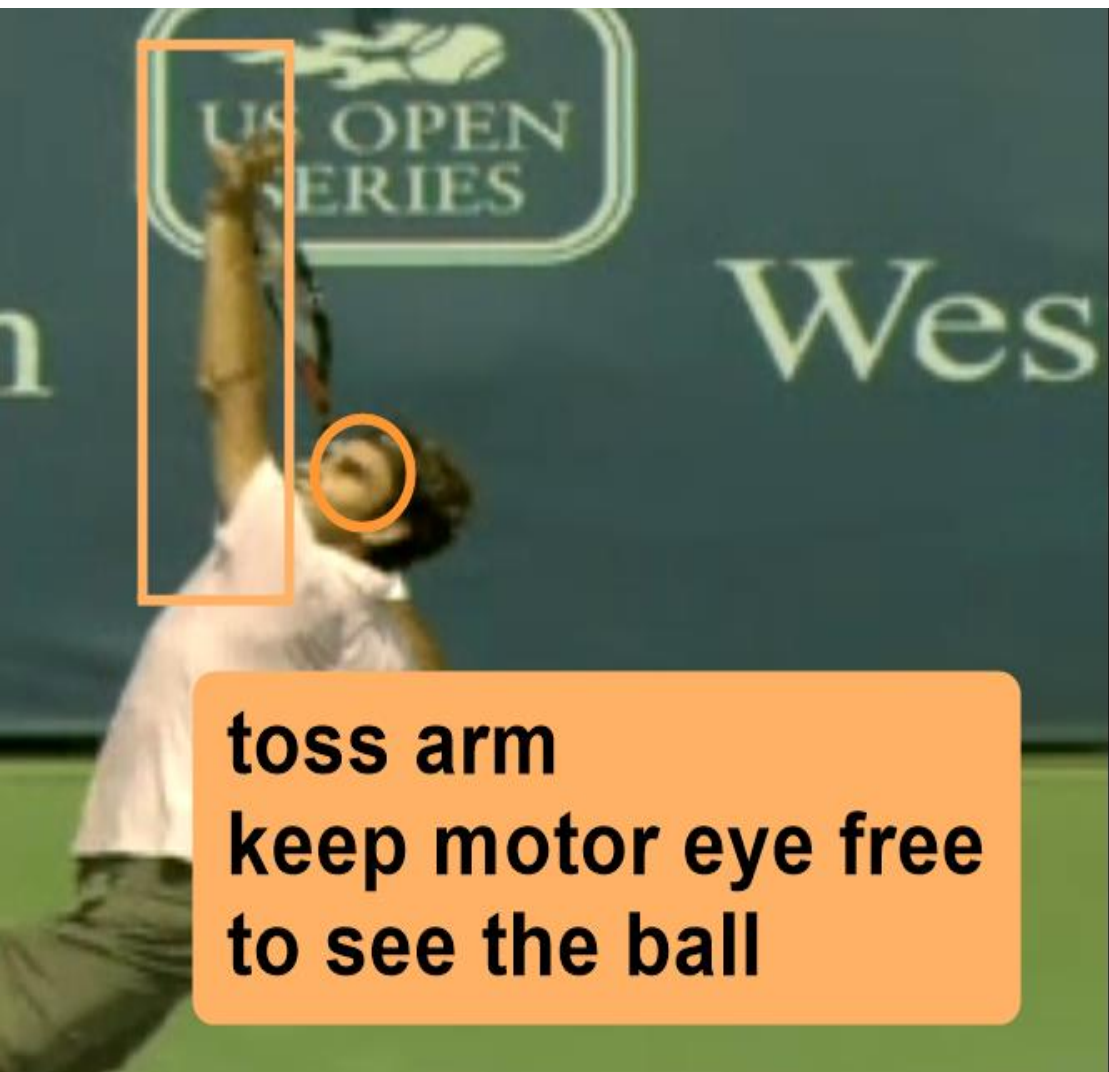
# SERVE AND MOTOR EYE



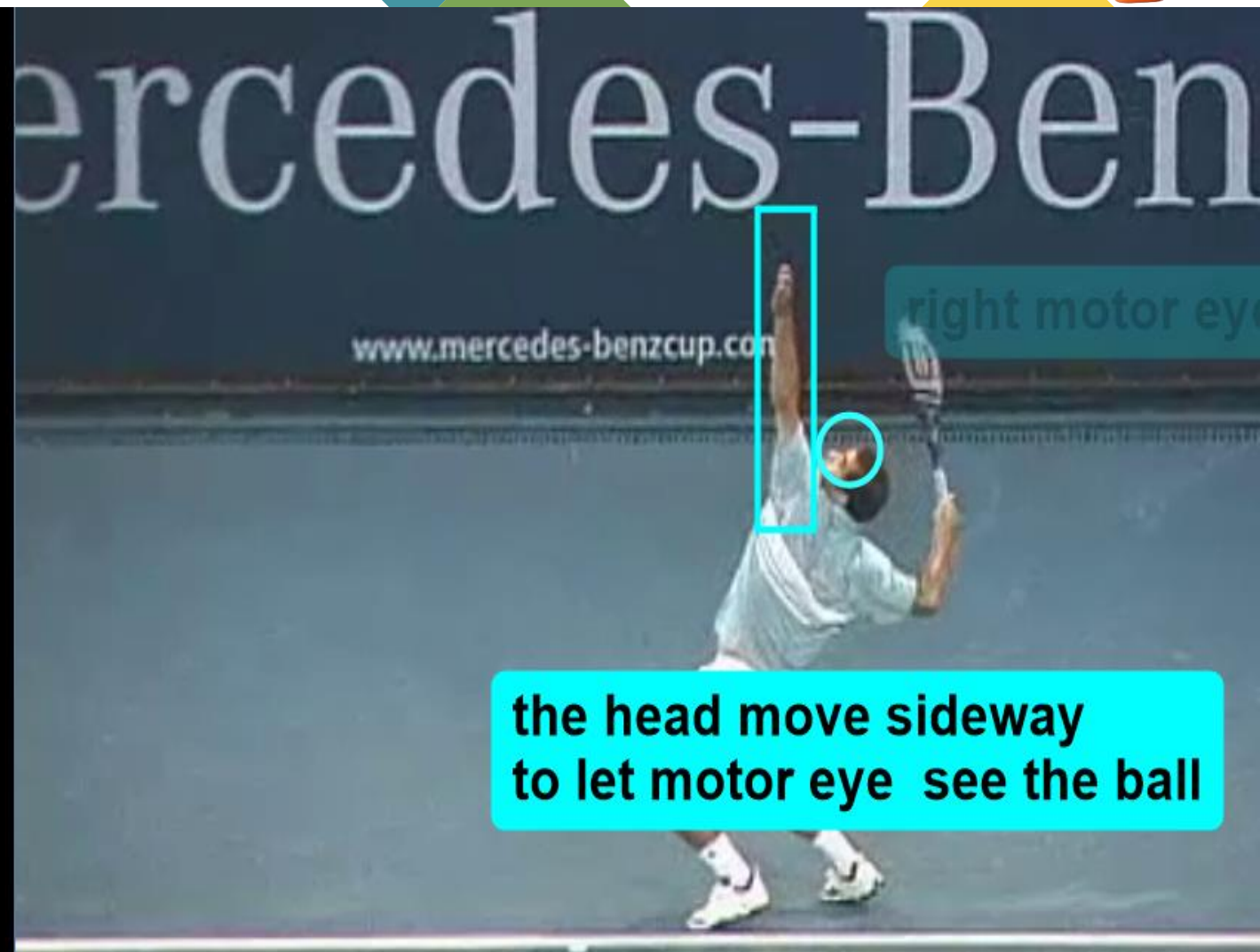
## SERVE MOTOR PREFERENCES motor eye



# SERVE MOTOR HEAD-EYE POSITION



toss arm  
keep motor eye free  
to see the ball



the head move sideways  
to let motor eye see the ball



# SERVE MOTOR PREFERENCES

loading -pelvic



# Serve motor preferences loading- pelvic



Grounded  
In quadriceps  
Pelvic in  
\_anteversion



Aerial in feet  
Pelvic in  
retroversion





# SERVE MOTOR PREFERENCES

## shoulder





# SERVE MOTOR PREFERENCES

motor eye-dominant shoulder-rotation  
timing





# SERVE TRUNK ROTATIONS

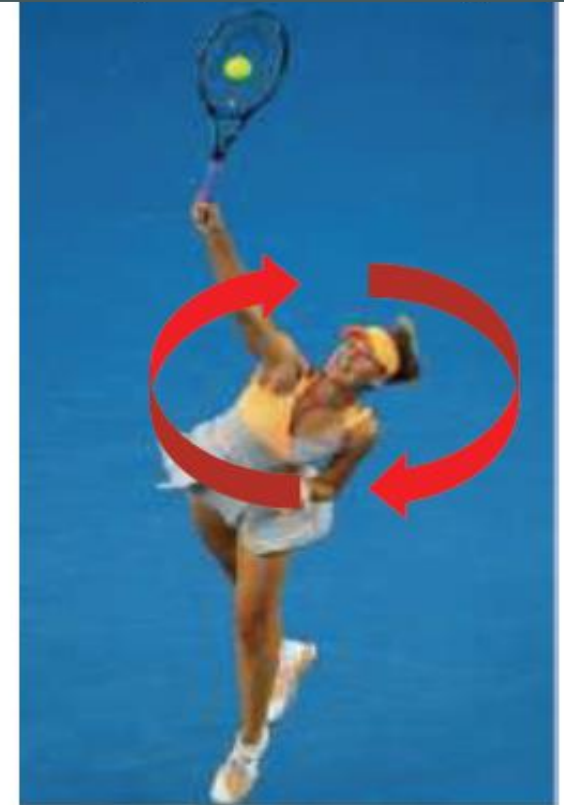
FOREWARD  
ROTATION



LONGITUDINAL ROTATION



ANTERIOR POSTERIOR  
SHOULDER OVER SHOULDER  
ROTATION





ASSOCIATED  
MOBILE POINT L 5



DISSOCIATED  
MOBILE POINT D 8



**MOTRICITY**

- AXIAL
- LARGE

**VISION**

- FOCUS
- GLOBAL

**IMPACT**



**AXIAL**

**FOCUS**



**LARGE**

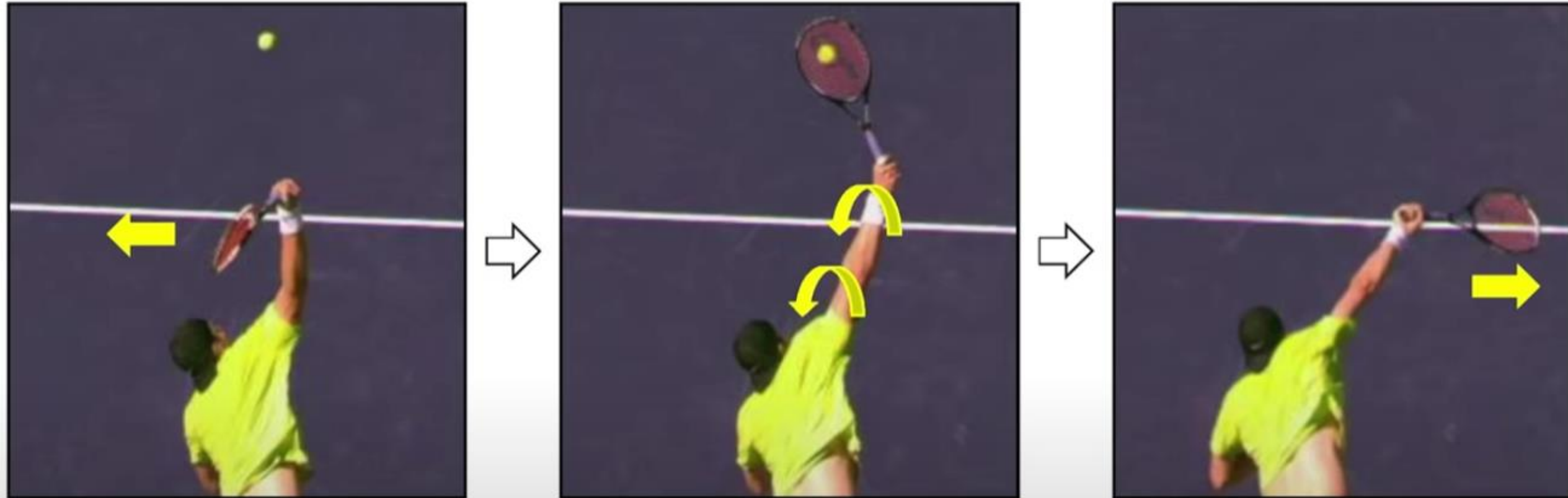
**GLOBAL**



## NO CONSCIOUS / VOLUNTARY WRIST SNAP



⇒ Long axis rotation = upper arm internal rotation + forearm pronation

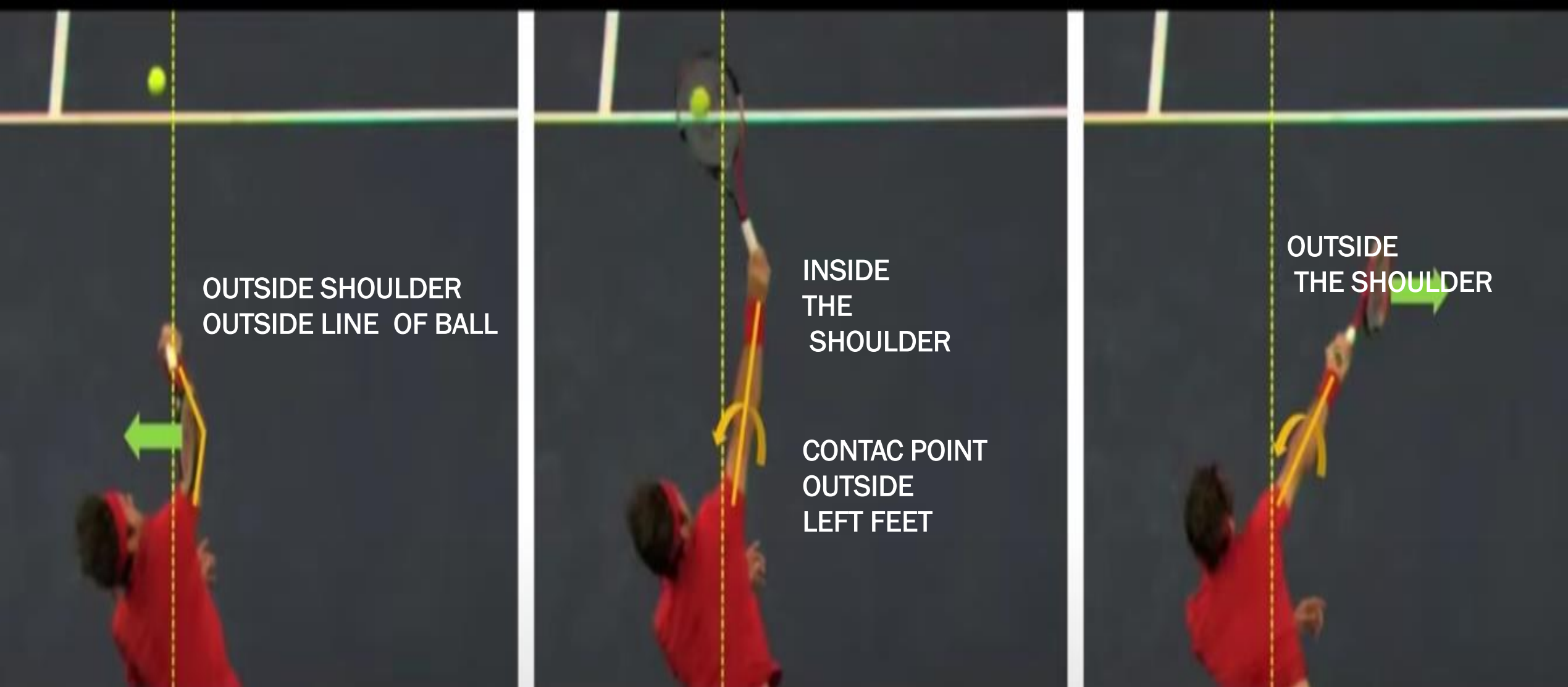


⇒ Upper arm internal rotation = main contributor of racket speed (~40%)

⇒ Arm/racket angle allowing IR



# INTERNAL SHOULDER ROTATION SEQUENCE RACQUET PATH



# SERVE LANDING PREFERENCES



•FOOT LANDING POSITION / INISE BASELINE/ FOOT WEIGHT LOADING

SHORT/ LONG FINISH

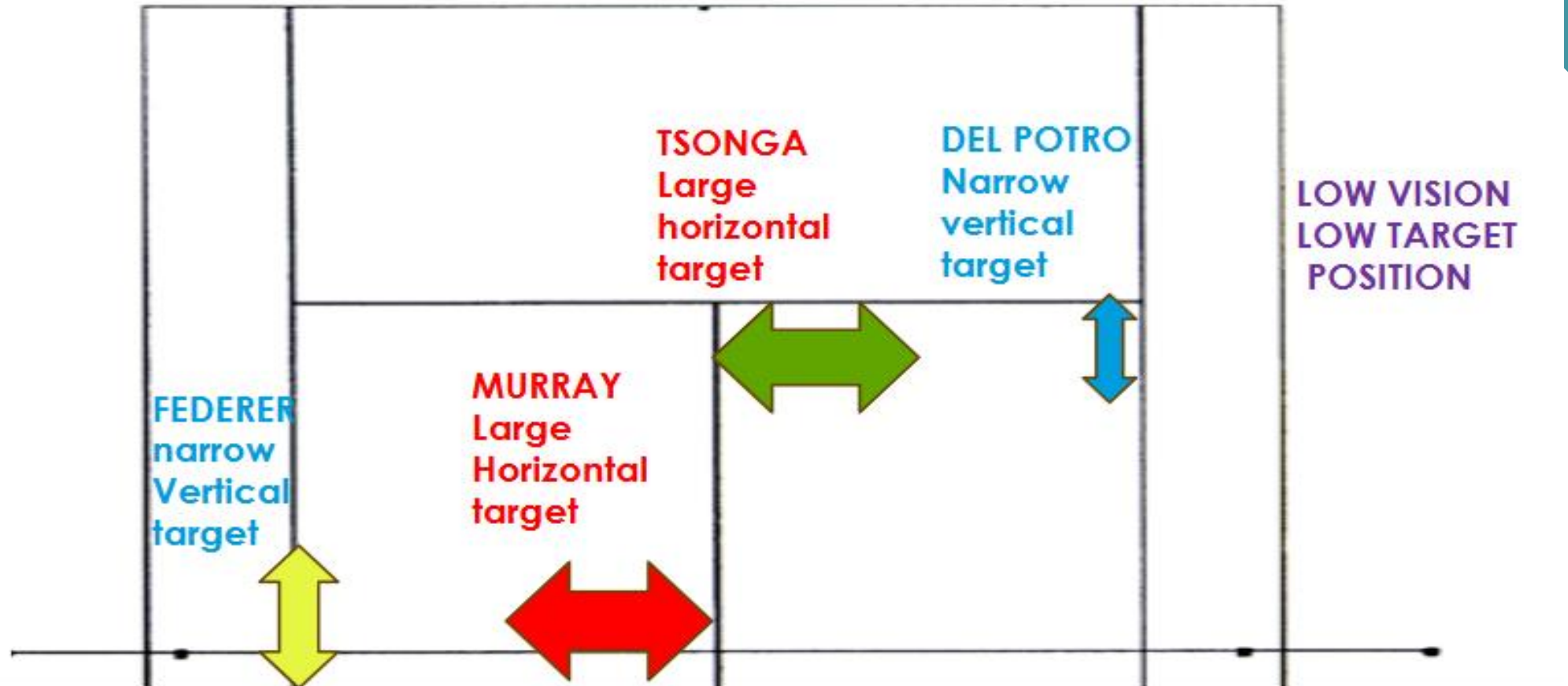
DEGREE OF FLEXION OF THE FRONT LANDING LEG  
( back leg kick help increase trunk rotation)



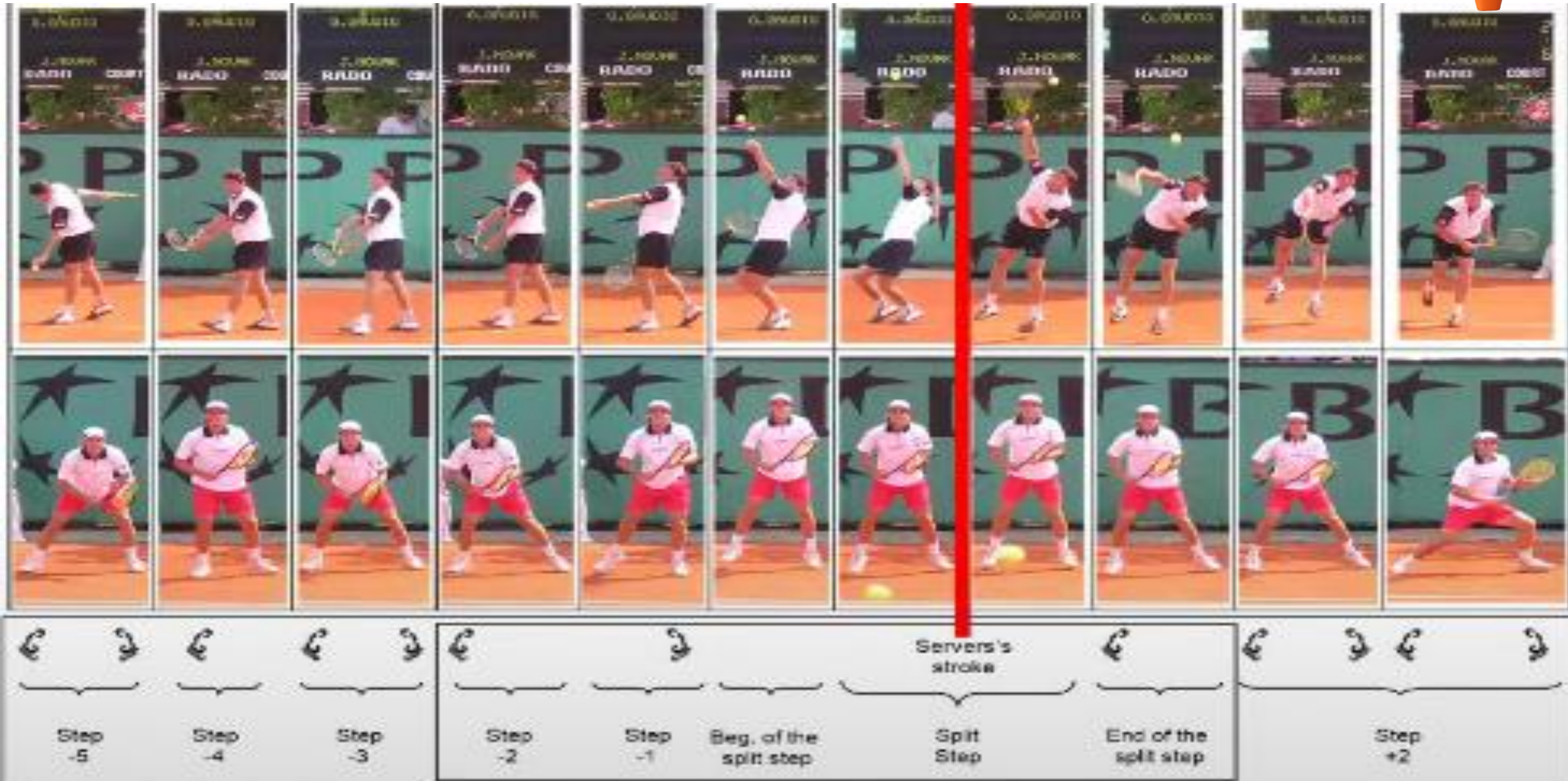


# TARGETS PREFERENCES

HIGH VISION  
HIGH TARGET  
POSITION



# RETURN OF SERVE





# RETURN OF SERVE / INDIVIDUALIZE MOTORS PREFERENCES

## POSTURE / VISION

- STAY MORE UP
- TRIPLE FLEXION

## INTENTION / ACTION

- VISUALISE RETURN
- LARGE LOW ZONE
- ENERGY OF THE BALL

## DIRECTION OF ENERGY

- USE CORE/ HIPS IN THE RETURN

## BREATHING

- BREATH BEFORE HIT THE BALL

## VARIATION POSITION

- MOVE DOWN AND UP
- MOVE TO VARY

- MOTOR EYE FORWARD
- DOMINANT SHOULDER
- AXIAL / LARGE

## GROUNDING



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## AERIAL



## POSTURE/ VISION

- BEND TRUNK
- MINIMUM HIP FLEXION

## INTENTION/ ACTION

- VISUALIZE HIGH TARGET ZONE OVER NET/ ENERGY OF THE BALL

## DIRECTION OF ENERGY

- USE CHEST – SHOULDERS TO HIT THE RETURN

## BREATHING

- BREATH AFTER HIT THE BALL

# THANK YOU AND QUESTION TIME



mytenniscloud

