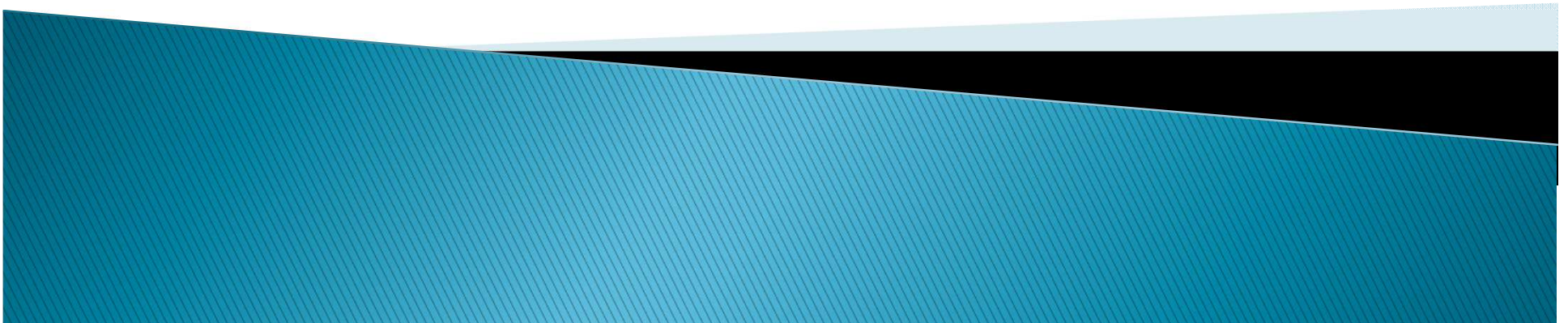
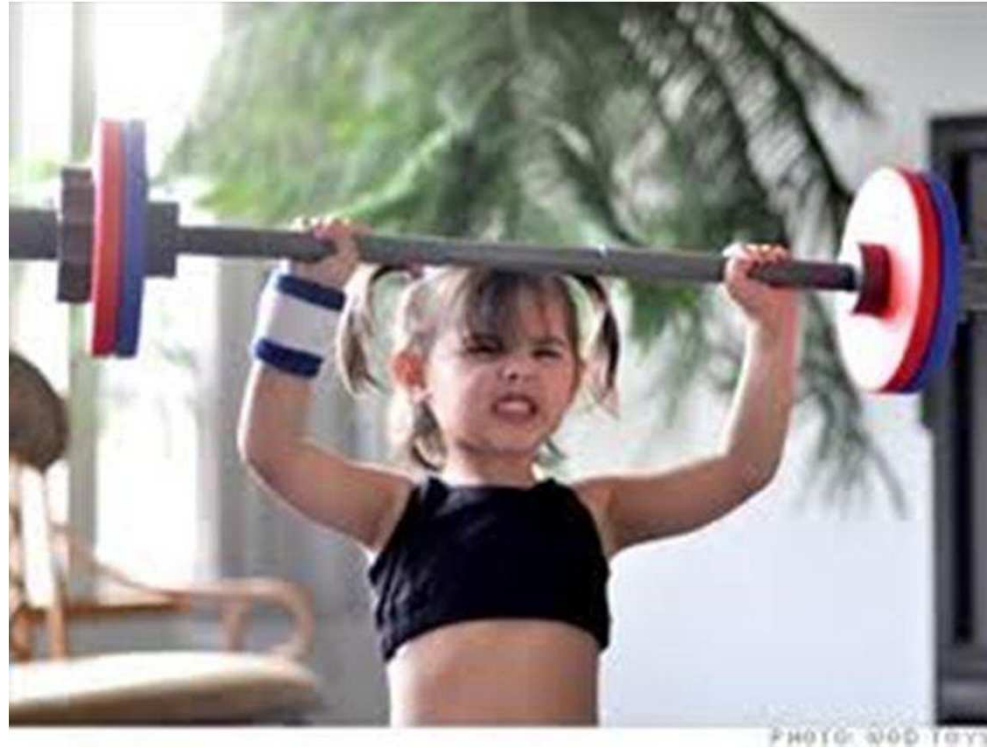


# Systematic approach to strength & conditioning



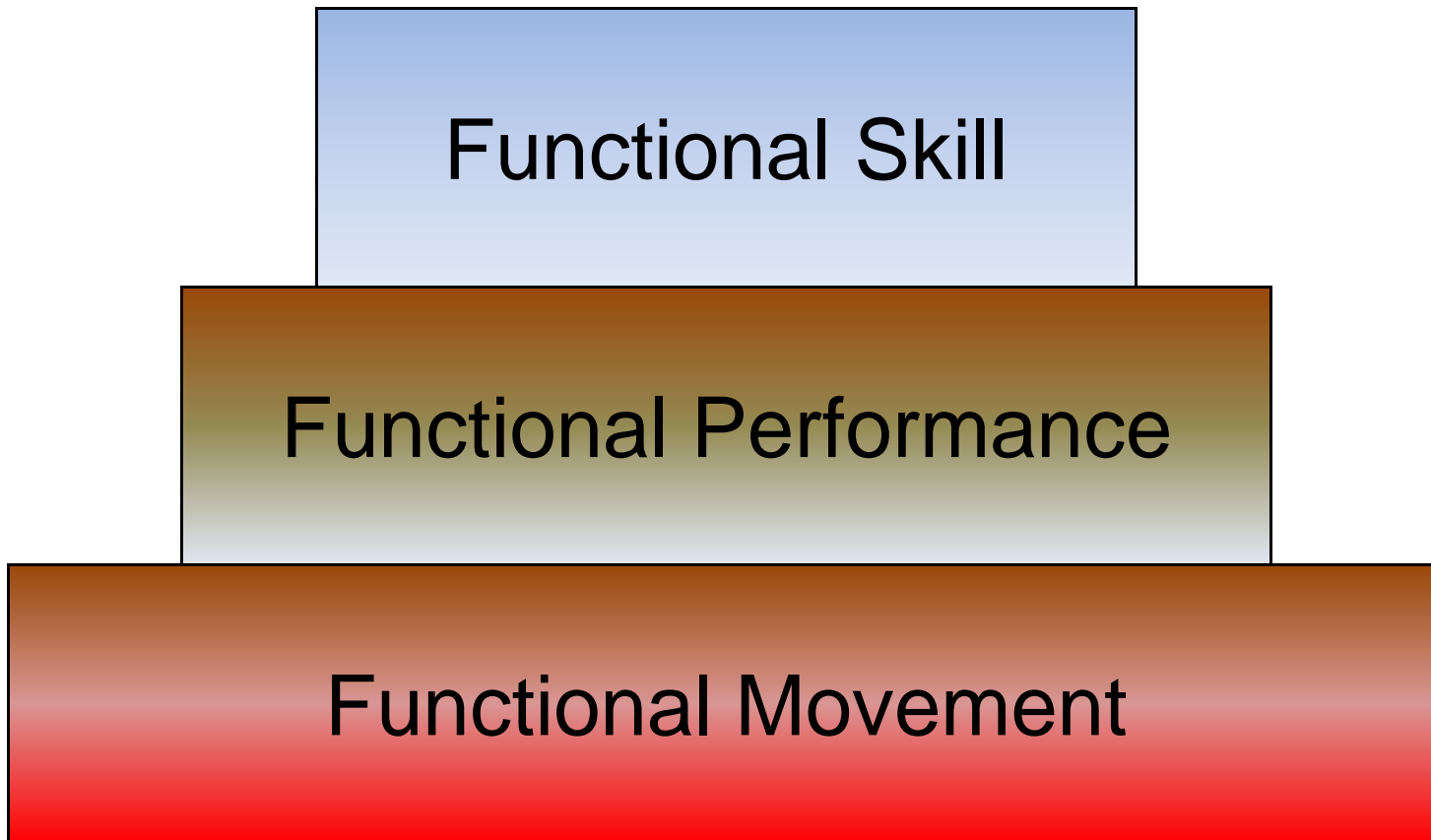


First train smart then hard



One size does not fit all

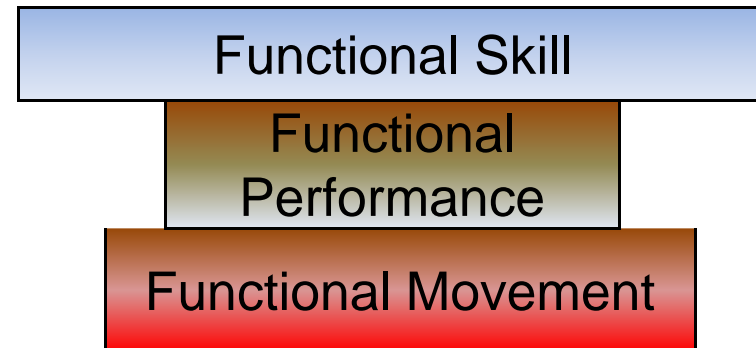
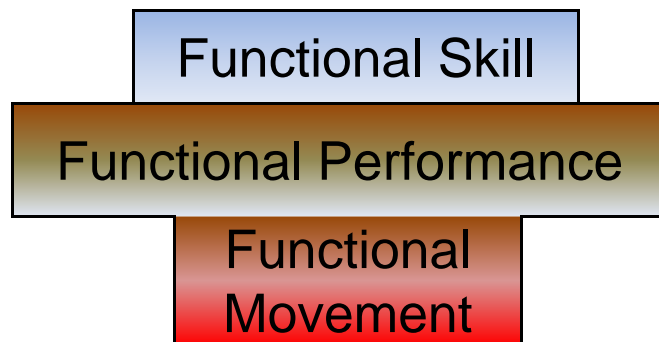
# Why Another Athlete's Program Doesn't Work For Everybody



Gray Cook: Optimal Performance Pyramid

ANDREAS SEPPI

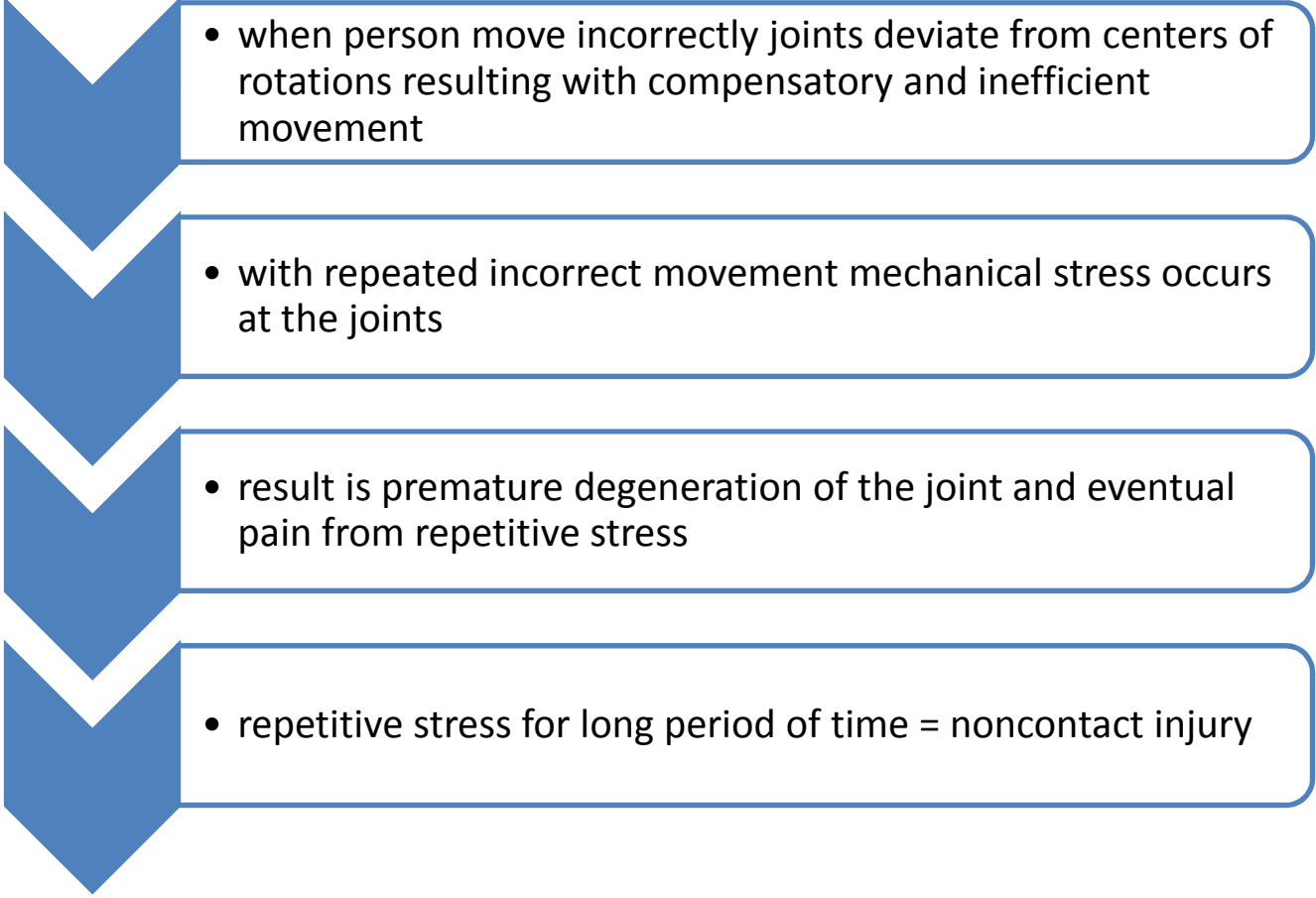
RICHARD GASQUET



**SPECIFIC  
PREPARATION**

**GENERAL  
PREPARATION**

**MOVEMENT**



- when person move incorrectly joints deviate from centers of rotations resulting with compensatory and inefficient movement

- with repeated incorrect movement mechanical stress occurs at the joints

- result is premature degeneration of the joint and eventual pain from repetitive stress

- repetitive stress for long period of time = noncontact injury

## *MOVEMENT IMPAIRMENT SYNDROME*

developed by Shirley Sahrmann

MOVEMENT

```
graph TD; A[MOVEMENT] --- B[MOBILITY]; A --- C[STABILITY]; A --- D[MOTOR CONTROL]
```

MOBILITY

STABILITY

MOTOR  
CONTROL



# MOBILITY



It's not just flexibility



What is joint system capable of performing without external influence



Mobility is measured at what you can do at the end of your range



Should be train first (look the children)



With mobility you can gain quality proprioception which leads to stability

# STABILITY



Ability of a joint system to maintain position in a presence of change



It's not strength and therefore can not be improved with classic strength training

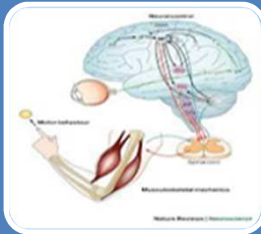


Stability is determined by good proprioception and proprioception is not possible without adequate mobility

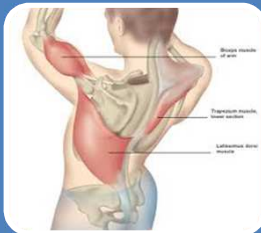


Stability: timing, coordination, ROM

# MOTOR CONTROL



Motor control is an integrated product of three aspects of the human anatomy: central nervous system, muscles and bones



Do you use correct muscles because to produce movement we need teamwork, which muscle fires, how strong he is, and when it comes to play

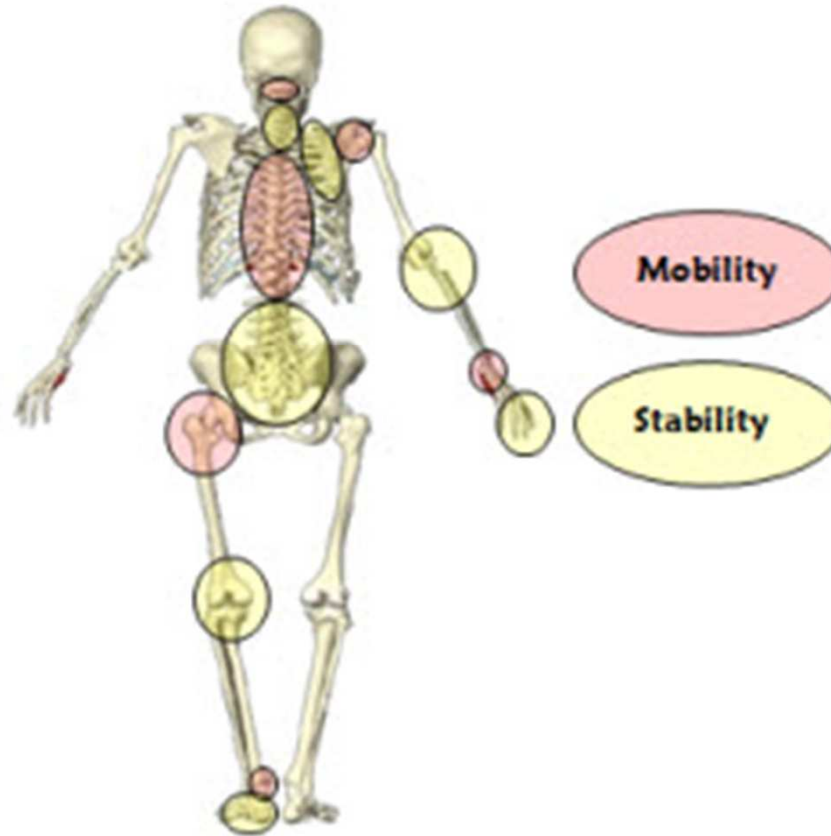


Do you activate your muscles in right order

# Joint by joint approach to training

Joint	Primary need
Ankle	Mobility
Knee	Stability
Hip	Mobility
Lumbar Spine	Stability
Thoracic Spine	Mobility
Scapulo-Thoracic Spine	Stability
Glenohumeral Joint	Mobility (and Stability)

# Joint by Joint Approach



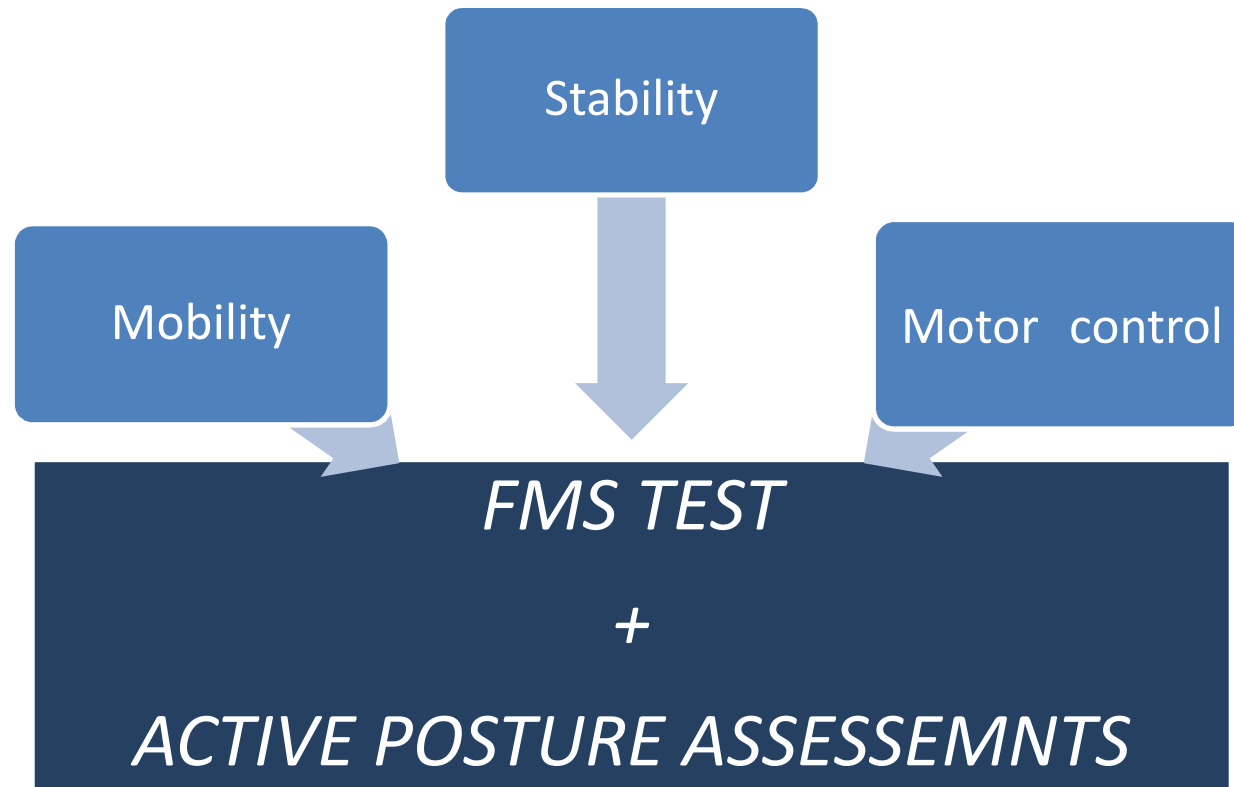
**Alternating series of stable segments moving on mobile joints**

# What happening when *system not working properly*

<u>When mobile joints become stable :</u>	<u>When stable joints become mobile :</u>
<ul style="list-style-type: none"><li>• forced to slow down</li></ul>	<ul style="list-style-type: none"><li>• dislocation, muscle strain or tear</li></ul>
<ul style="list-style-type: none"><li>• high energy expenditure</li></ul>	<ul style="list-style-type: none"><li>• disc herniations</li></ul>
<ul style="list-style-type: none"><li>• poor recovery</li></ul>	<ul style="list-style-type: none"><li>• movement impairment syndrom</li></ul>



Proper movement and  
function can give you  
**A HUGE ADVANTAGE**  
to perform at the highest  
level






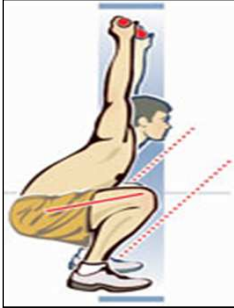




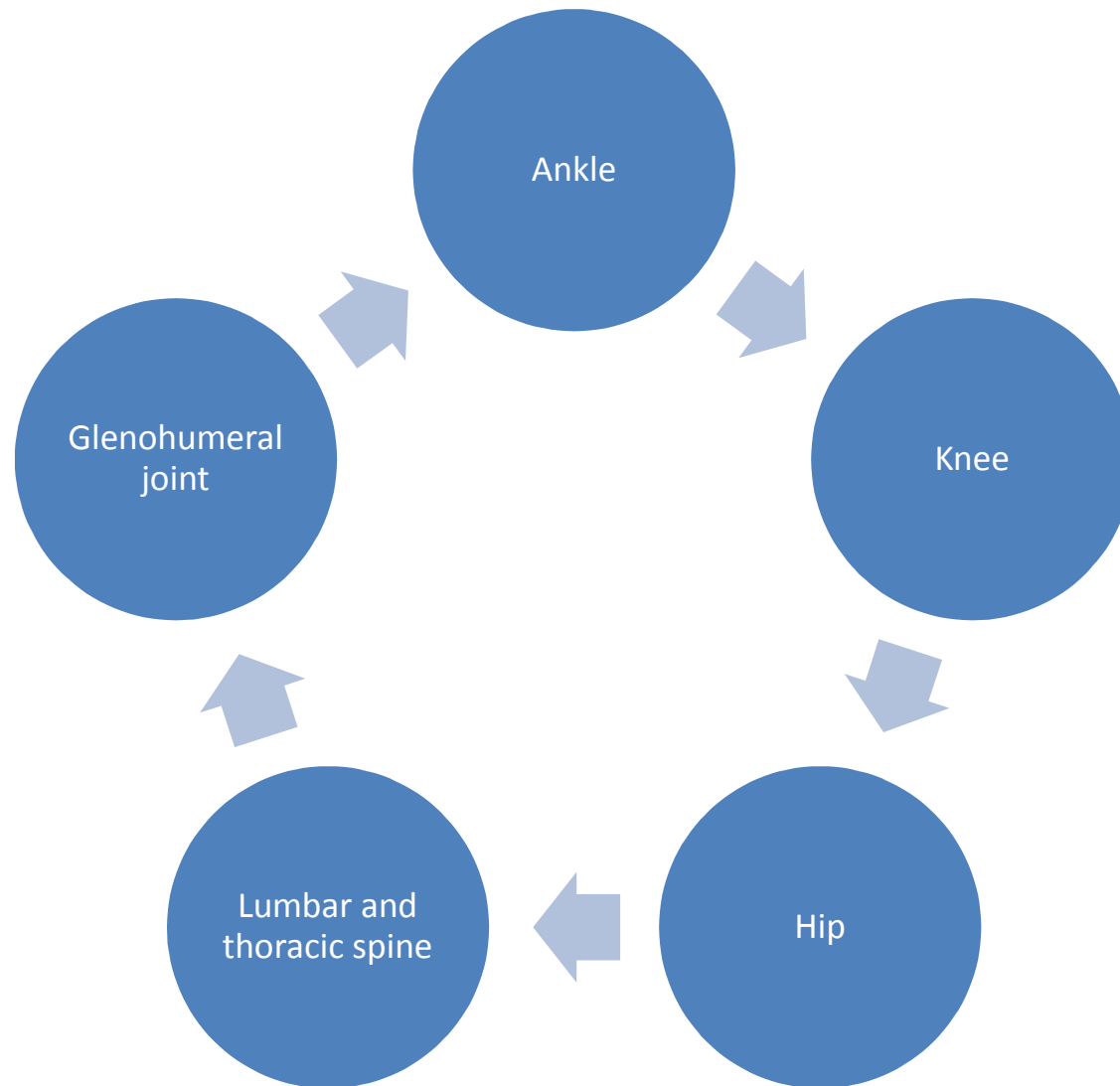


- is screen for dysfunction and risk for injury
- assessment technique, which attempts to identify imbalances in mobility and stability during fundamental movement patterns. This movement-based assessment will pinpoint functional deficits related to proprioceptive, mobility and stability weaknesses.
- many individuals who perform at very high levels during activities are unable to perform these simple movements. These individuals should be considered to be utilizing compensatory movement patterns during their activities, sacrificing efficient movements for inefficient ones in order to perform at high levels. If these compensations continue, then poor movement patterns will be reinforced leading to poor biomechanics and possible injury over time.
- is comprised of seven fundamental movement patterns



Exercise			Test score
<p style="text-align: center;"><b><u>Deep squat</u></b></p> <p><b>Used to screen hips, shoulders, knees, spine and ankles.</b></p> <p>You'll be asked to hold a dowel rod directly above your head to keep your hands and arms in place, and squat as low as you can with good form. The ability to perform the deep squat requires appropriate pelvic rhythm, closed-kinetic chain dorsiflexion of the ankles, flexion of the knees and hips and extension of the thoracic spine, as well as flexion and abduction of the shoulders.</p> <p><b><i>What the specialist is looking for:</i></b> Ideally, the upper torso will be parallel to the shins, thighs will be below horizontal, and the knees and dowel will be aligned over the feet. In faulty movement patterns, the heels might be off the ground, the dowel might fall forward, the squat might be too high, or there's twisting, leaning or other asymmetries.</p> <p><u>Score 3</u> – achieved all criteria</p> <p><u>Score 2</u> – achieved all criteria but with the heels on a platform</p> <p><u>Score 1</u> – can not do it with the heels on a platform</p> <p><u>Score 0</u> – feeling pain in the foot or knee or hip or lumbar spine</p>	<div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div>		<div style="text-align: center; margin-bottom: 20px;">0</div> <div style="text-align: center; margin-bottom: 20px;">1</div> <div style="text-align: center; margin-bottom: 20px;"><b>2</b></div> <div style="text-align: center;">3</div>

# Active posture assessment



## ACTIVE POSTURE ASSESSMENT

NAME \_\_\_\_\_ AGE \_\_\_\_\_ GENDER \_\_\_\_\_ HEIGHT \_\_\_\_\_ WEIGHT \_\_\_\_\_

PRIMARY SPORT \_\_\_\_\_ PRIMARY POSITION \_\_\_\_\_ HAND/LEG DOMINANCE \_\_\_\_\_ DATE \_\_\_\_\_

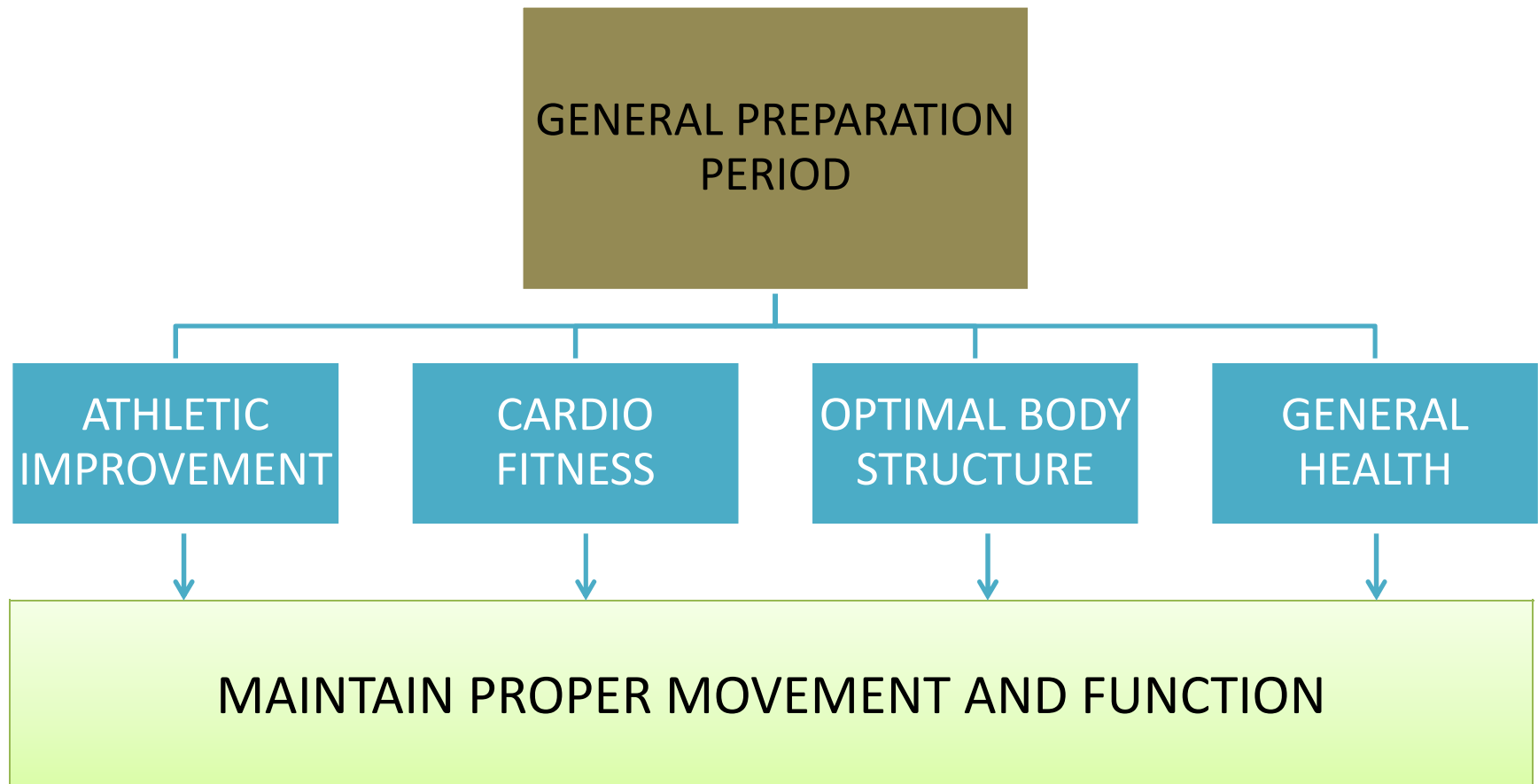
	TEST	RESULT		GOAL	PURPOSE
		RIGHT SIDE	LEFT SIDE		
1.	Thoracic spine quadruped rotation			60° rotation both sides	To assess your thoracic spine rotation.
2.	Pectoralis minor test supine			2,5 cm distance from the posterior aspect of the acromion to the surface	To assess the length of the pectoralis minor muscle.
3.	Pec toralis major – sternal head			135° with hands on the floor palms facing up	To assess the length of the sternal head of the pectoralis major muscle.
4.	Shoulder flexion supine			180° with hands on the floor palms facing down	To assess shoulder flexion range of motion which is influenced by <a href="#">latissimus dorsi length</a> , pectoral muscle length, and thoracic spine mobility.
5.	Shoulder external rotation supine			90°> rotation	To assess shoulder external rotation range of motion which is influenced by shoulder internal rotators such as the pectorals, lats, subscapularis, and anterior deltoid.
6.	Shoulder internal rotation supine			< 70° rotation	To assess shoulder internal rotation range of motion which is influenced by stiffening and shortening of the posterior shoulder musculature.
	TOTAL MOTION			equal	
	GIRD			max.15% deficit	
	F&F			symetrical	
7.	Scapular upward rotation – standing			135° with hands liftings arms away from the wall	To assess scapular upward rotation which is influenced by <a href="#">serratus anterior strength</a> , <a href="#">lower trapezius strength</a> , pectoral muscle length, and shoulder external rotation range of motion.
8.	Multisegmental flexion			toe touch, posterior weight shift	Assess poserior weighth shift, lumbar curve
9.	Multisegmental extension			hands clear scapula, scapula clear heels, asis over hips	Assess anterior weighth shift
10.	Multisegmental rotation			90°> shoulder rotation, 45° hip rotation	Left/right simetry



**SPECIFIC  
PREPARATION**

**GENERAL  
PREPARATION**

**MOVEMENT**



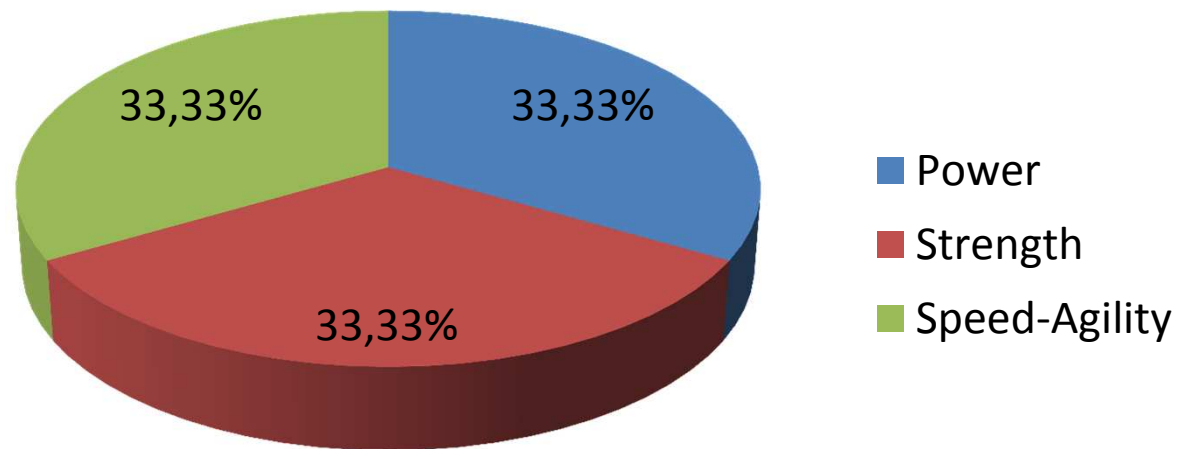


# GENERAL PREPARATION

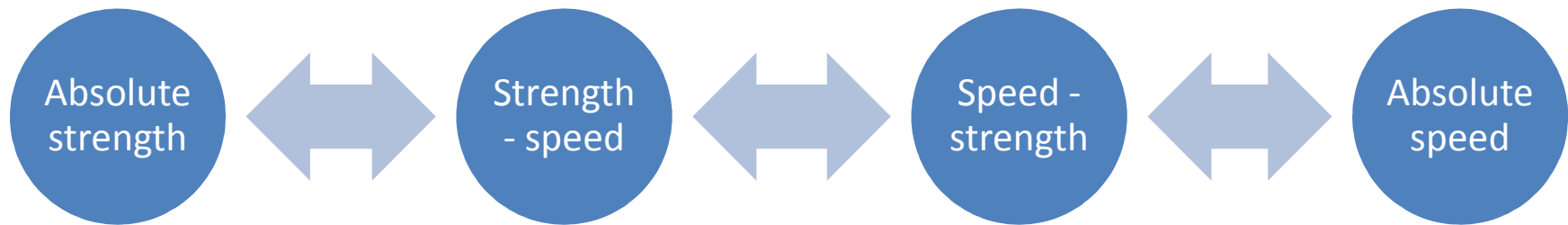


- we should start to make questions about sport
- we need to analyze tennis by anatomical, functional, motoric analysis
  - anatomical : provides insight into topological regions that are most responsible for the realization of motion in sport
  - functional : provides information on dominance of energy processes in sport
  - motoric : motor skills that are most responsible for the successful performance

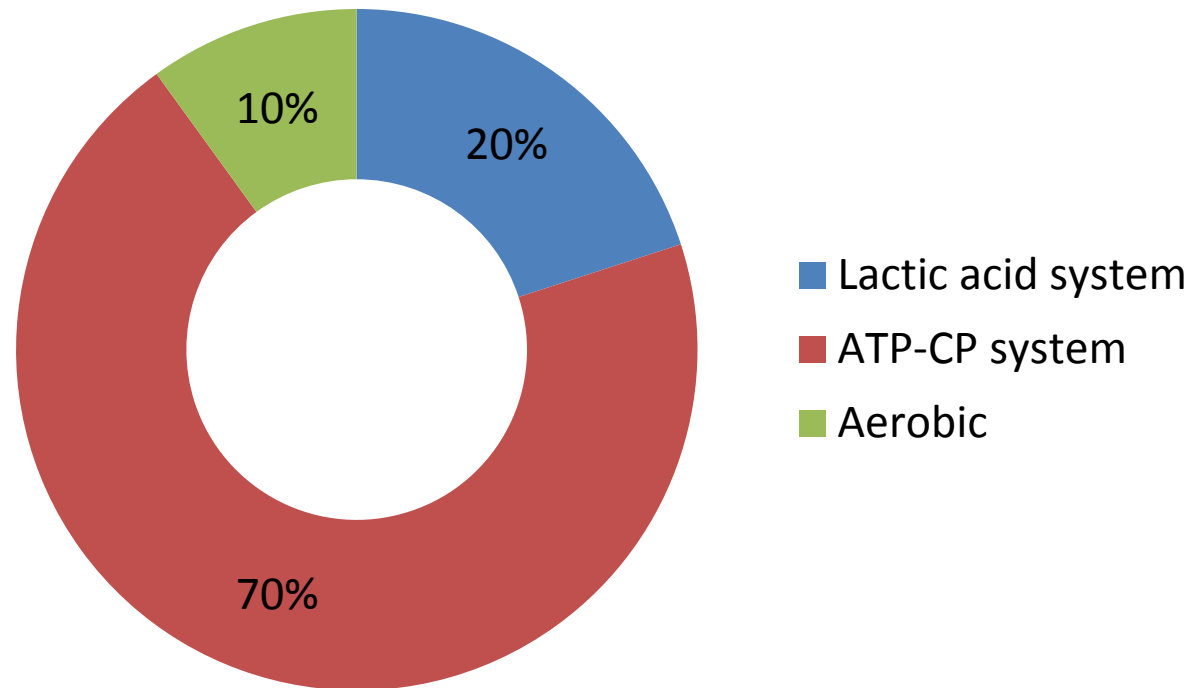
# ATHLETIC IMPROVEMENT



# Absolute strength to absolute speed continuum



# CARDIO FITNESS



# OPTIMAL BODY STRUCTURE

- body fat %

- muscle mass %

- total weight

# GENERAL HEALTH

- regular control of blood (2-3× year)

- regular inspection of vision (1-2× year)

- nutrition, supplementation



**SPECIFIC  
PREPARATION**

**GENERAL  
PREPARATION**

**MOVEMENT**