

San Sebastian

June 18 2010



# Functional evaluation for basketball



# Concepts

- The human motion starts with an alternate sequence of steps.
- Just evaluating a simple Squat or a OLS we can extrapolate many practical advices to finalize athletes' training programs.



# What we should check?

- In every movement we use dynamic muscles and postural muscles that work together;
- When we analyze a movement we have to consider both;
- This analysis can orient training choices in different ways to improve movement efficiency;



# Why Squatting?

Strength, flexibility  
and stability  
together!

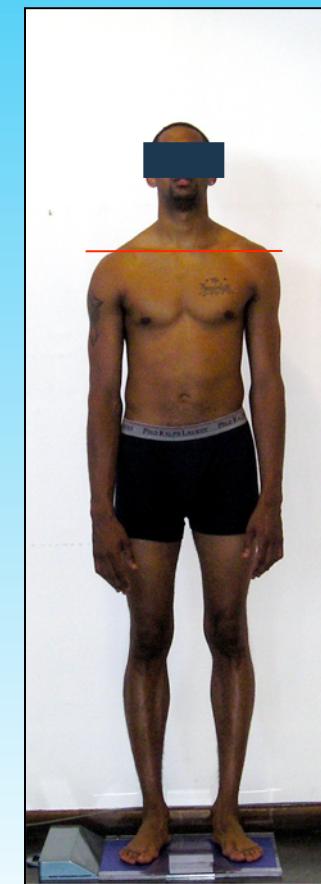
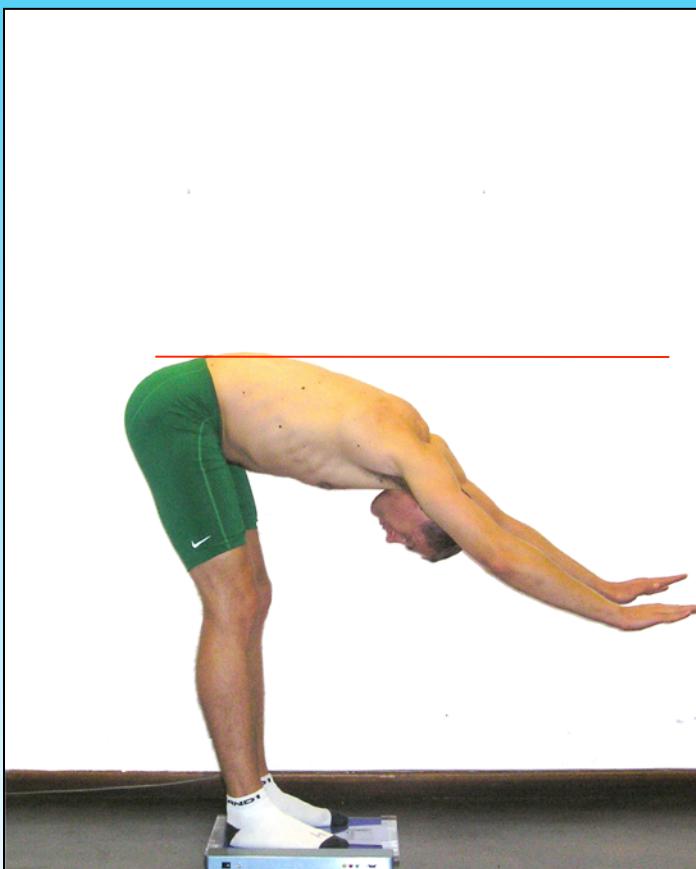


# How to start?

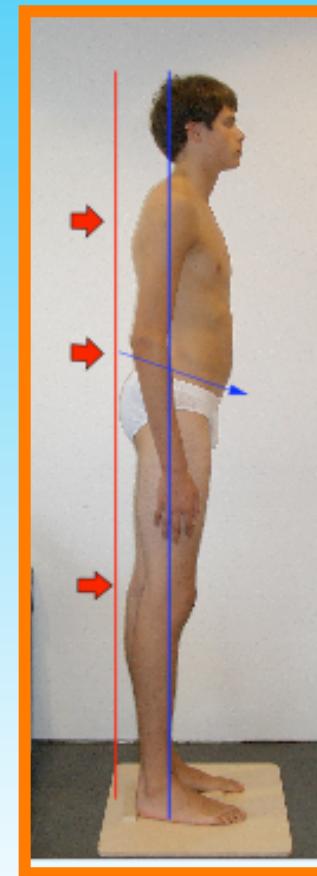
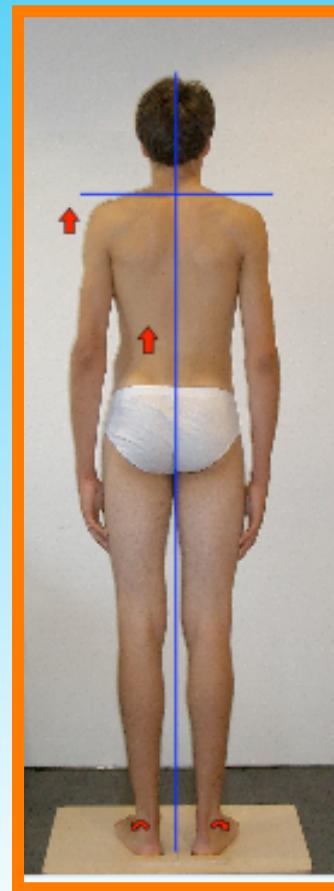
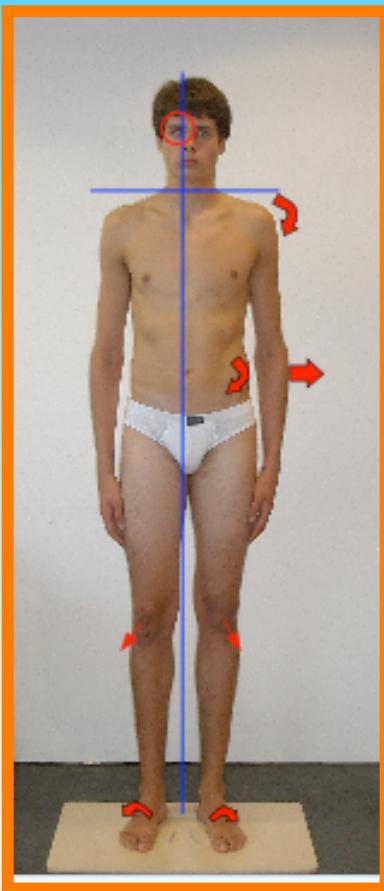
1. Postural analysis
2. Baropodometric, stabilometric test
3. Foot morphologycal analysis
4. Squat analysis
5. OLS analysis
6. Gait and jump analysis



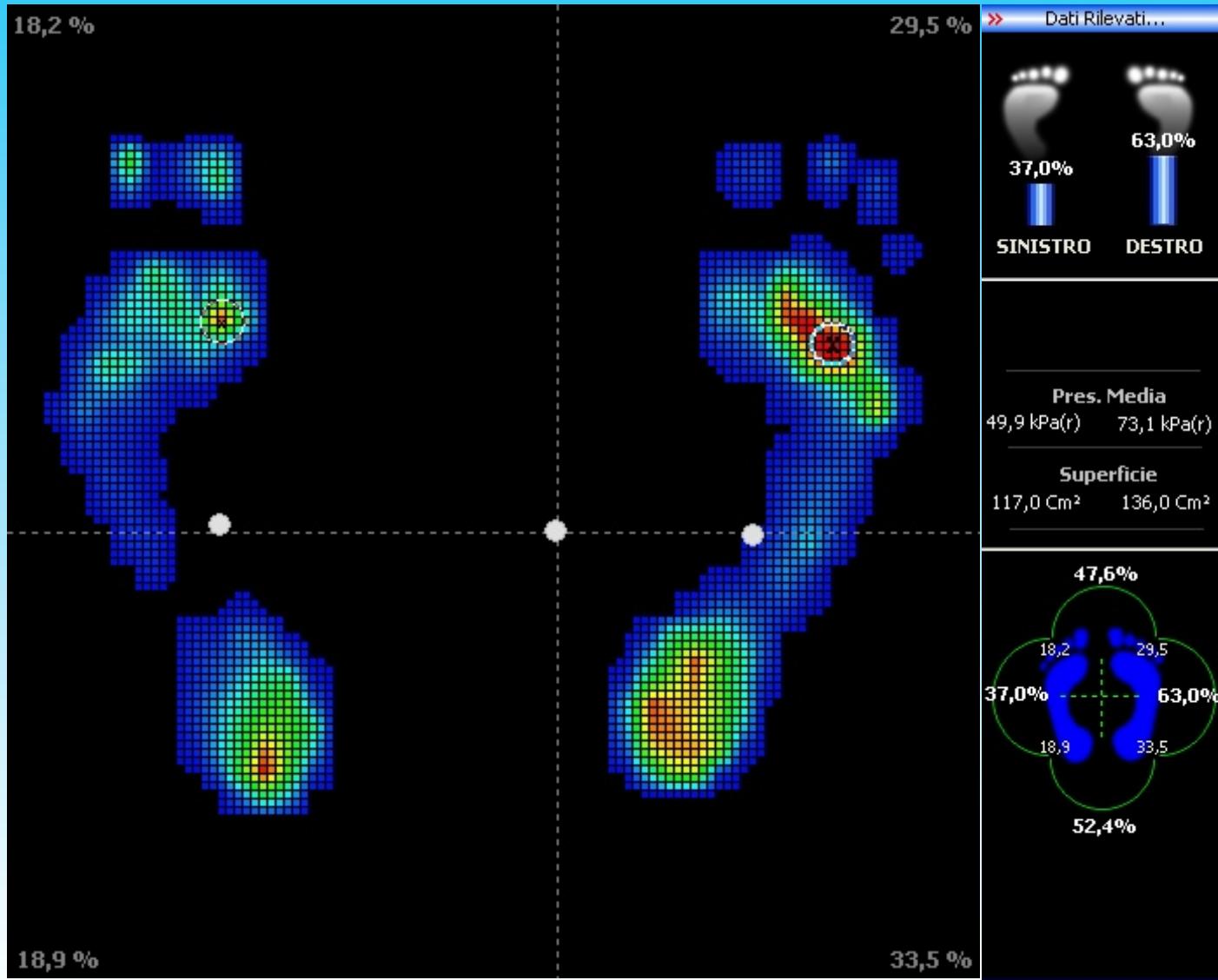
# POSTURAL ANALYSIS



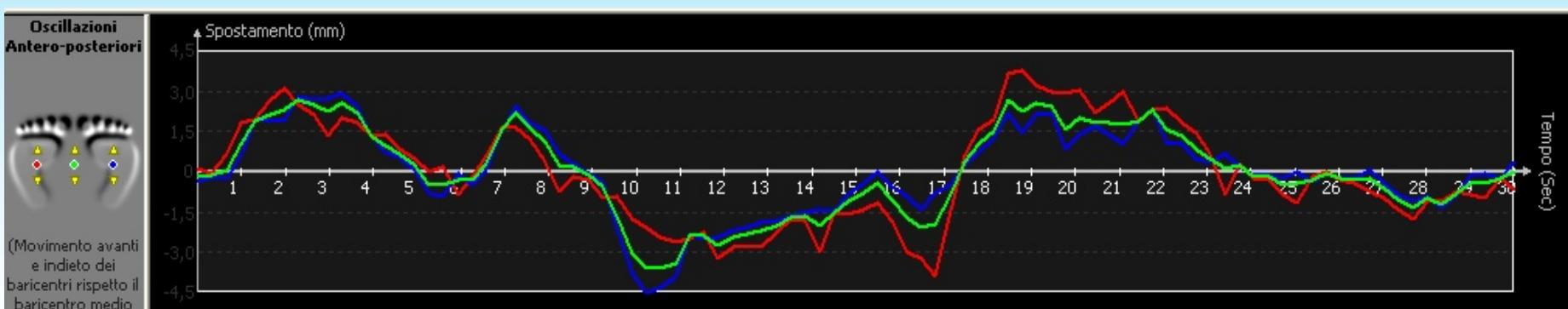
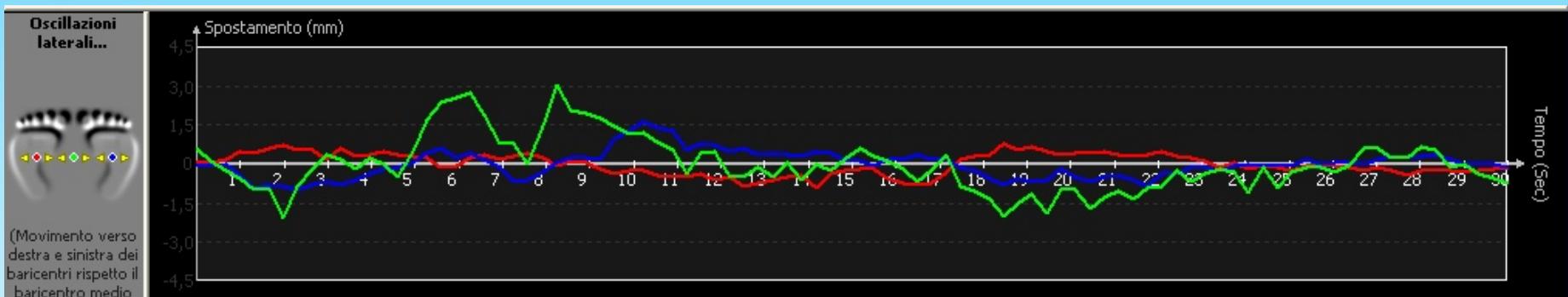
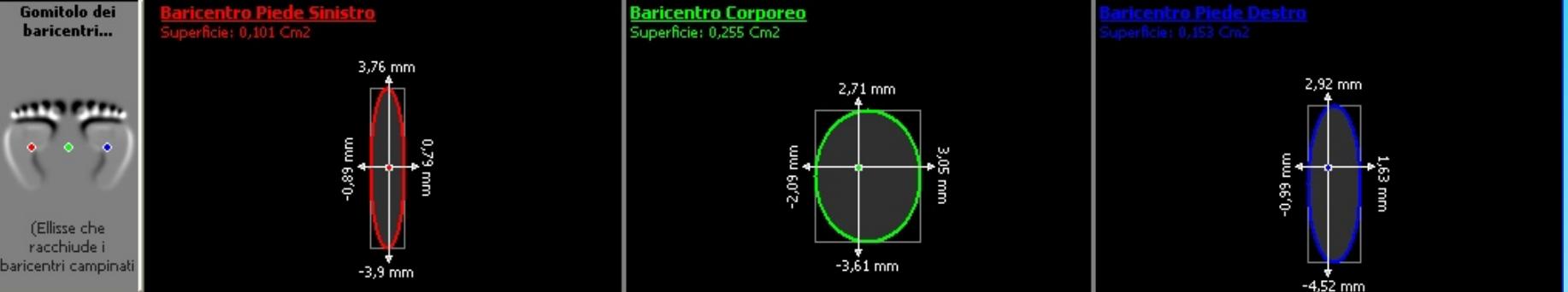
# POSTURAL ANALYSIS



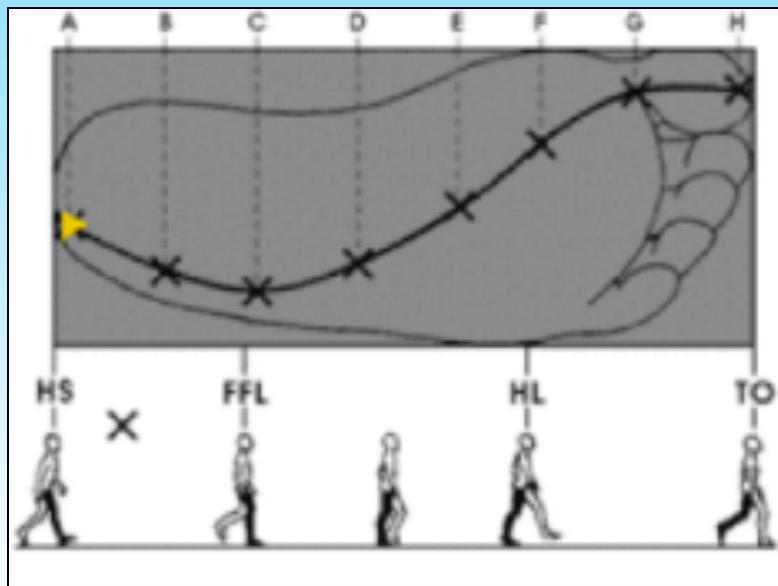
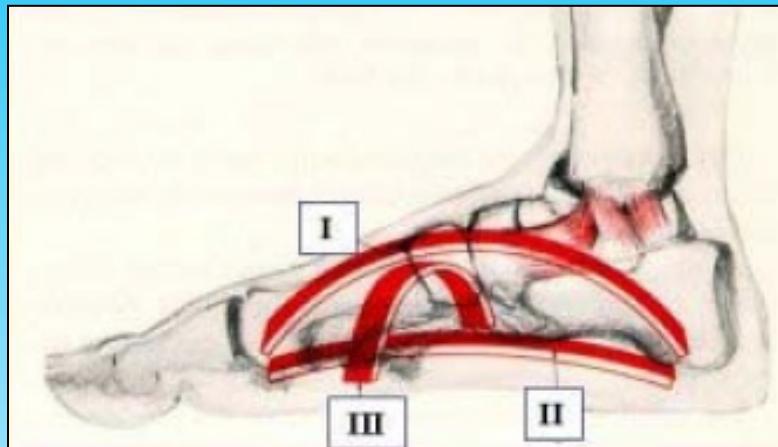
# Baropodometric analysis



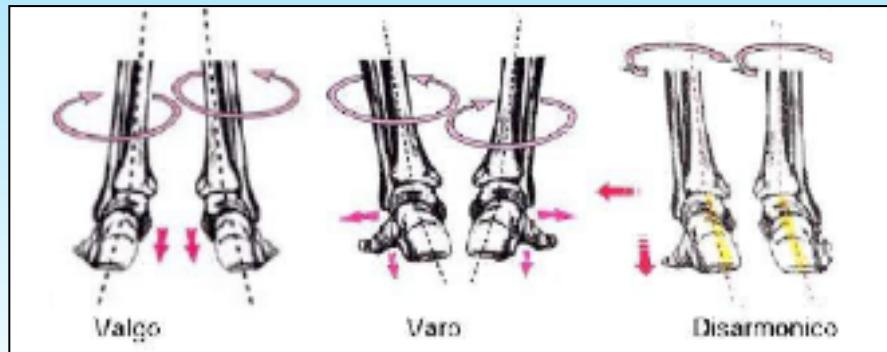
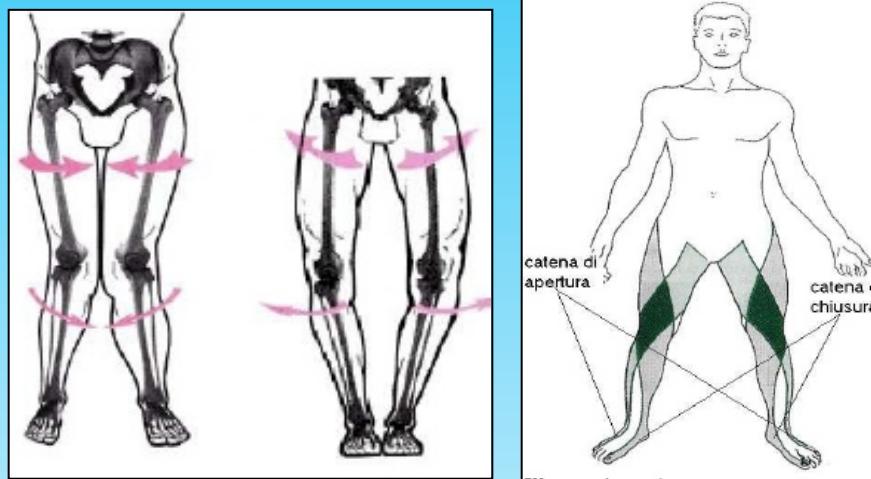
# Stabilometric assessment



# Foot analysis



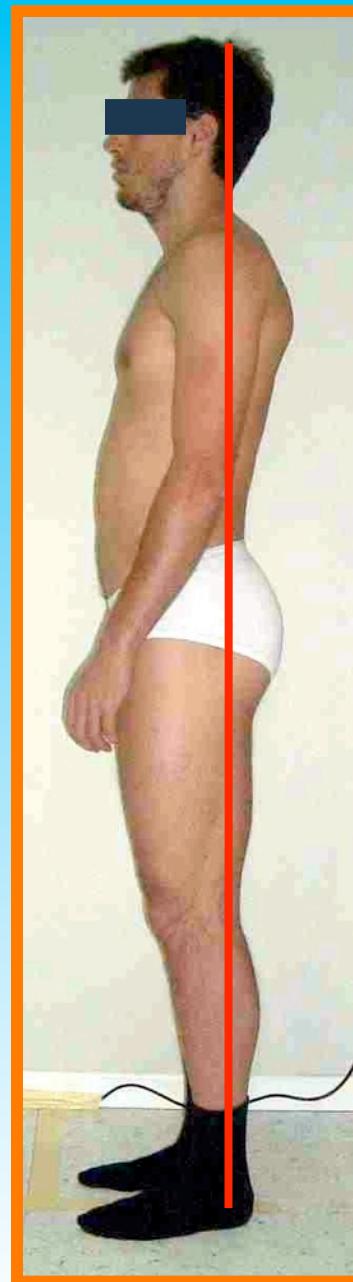
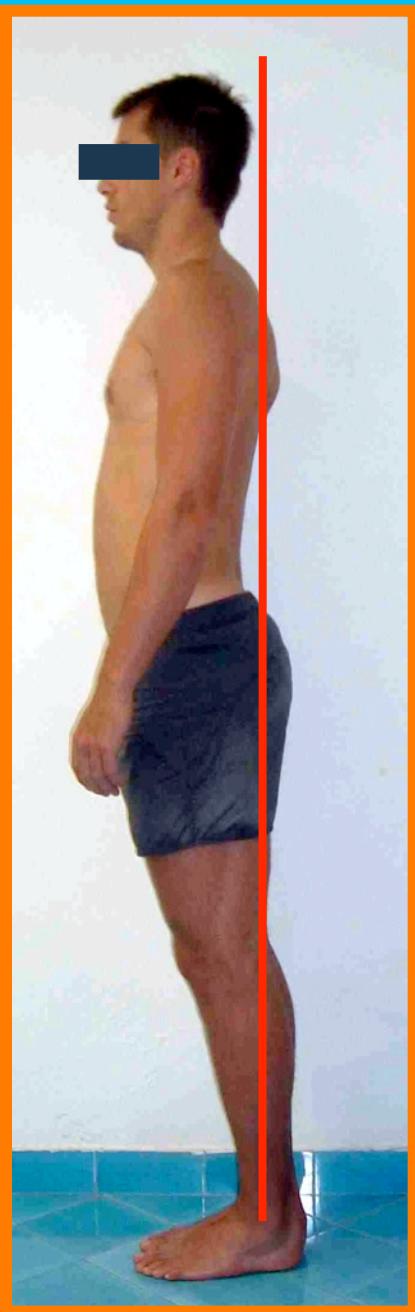
# Joints analysis



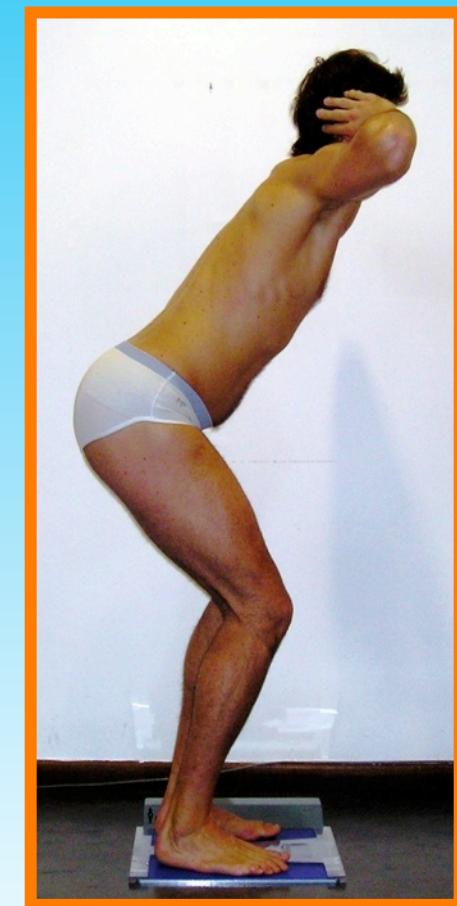
**From Bricot**







# SQUAT TEST

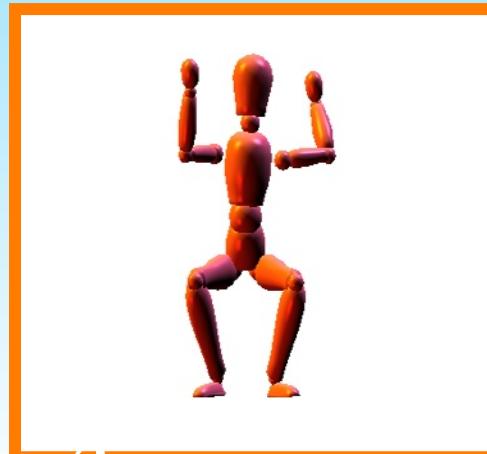


# When?





# Squat Test



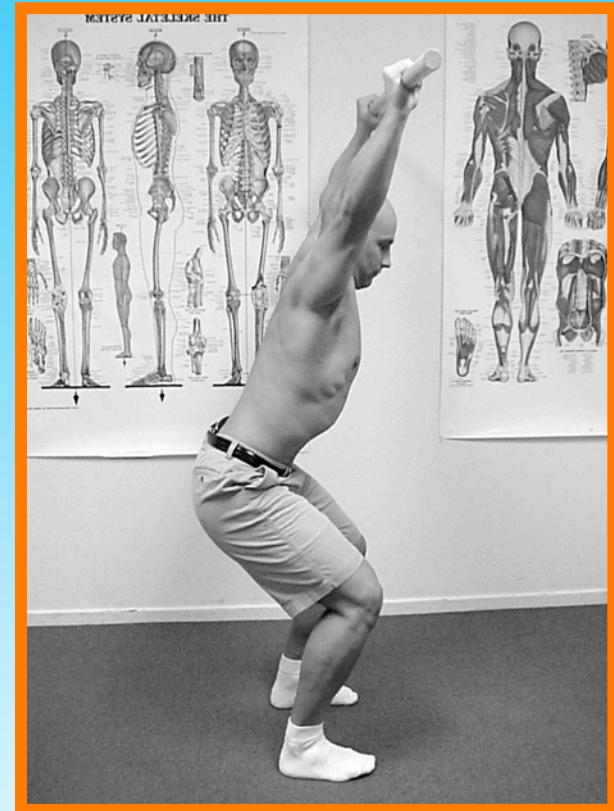
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# NASM

# national

# academy of

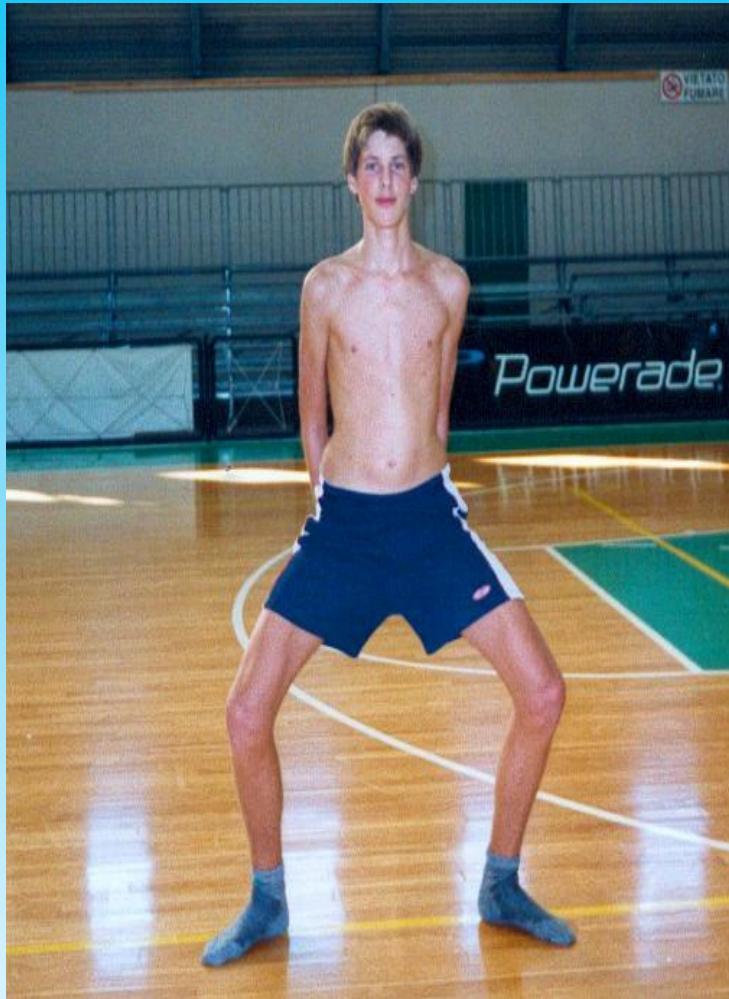
# sport medicine



# Fizkultura i Sport University of Moscow

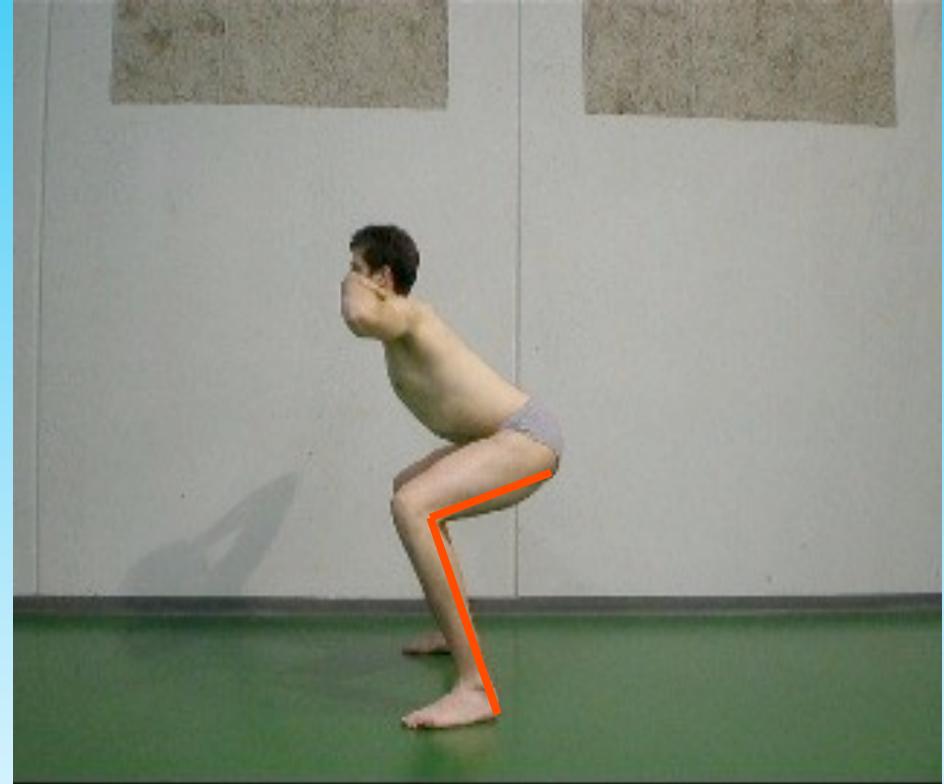






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# What about efficiency?



# Funzionalità globale



p solleva caviglia dx

p solleva caviglia sx

p piede in supinazione dx

p piede in pronazione dx

p piede in supinazione sx

p angolo ginocchio dx

p angolo ginocchio sx

p peso ginocchio dx

p peso ginocchio sx

p ginocchio dx interno

p flessione del busto av.

p inclinazione a dx

p inclinazione a sx

p tenuta lordosi lombare

p rotazione del busto a dx

p tenuta gomito dx

p tenuta gomito sx

p elevazione spalla dx

p elevazione spalla sx

p gomito dx non in linea

BENT TEST \_\_\_\_\_

SIT AND REACH \_\_\_\_\_

SIDE BENT TEST \_\_\_\_\_

BACK EXTENSION \_\_\_\_\_

## Funzionalità analitica

Caviglia gamba tesa dx \_\_\_\_\_ sx \_\_\_\_\_ Caviglia gamba flessa dx \_\_\_\_\_ sx \_\_\_\_\_ Ischio dx \_\_\_\_\_ Ischio sx \_\_\_\_\_  
Anca flessione dx \_\_\_\_\_ Anca fless. sx \_\_\_\_\_ Rotatori dx \_\_\_\_\_ Rotatori sx \_\_\_\_\_ Schiena torsione dx \_\_\_\_\_ sx \_\_\_\_\_  
Lungo adduttore dx \_\_\_\_\_ sx \_\_\_\_\_ Piccolo adduttore dx \_\_\_\_\_ sx \_\_\_\_\_ Anca estensione dx \_\_\_\_\_ sx \_\_\_\_\_  
Quadricipite dx \_\_\_\_\_ sx \_\_\_\_\_ Spalle braccia tese in fuori dx \_\_\_\_\_ sx \_\_\_\_\_ in alto dx \_\_\_\_\_ sx \_\_\_\_\_

# Bi - dimensional analysis of a Single Leg Squat

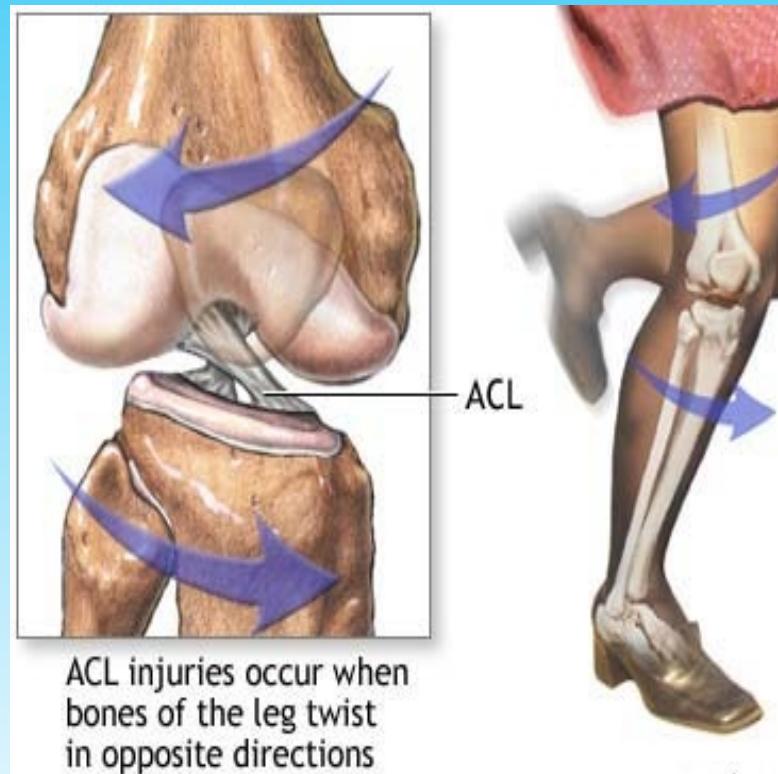


# When?



# Torsional stiffness

- “Female athletes who partecipate in sports involving jumping and cutting maneuvers are up to eight times more likely to sustain a rupture of the cruciate ligaments than are men partecipating in the same sports”



ACL injuries occur when bones of the leg twist in opposite directions

**Woijtis,Huston,aa.vv,  
University of Michigan 2003,  
Journal of bone and joint surgery.**

# Torsions and Basketball

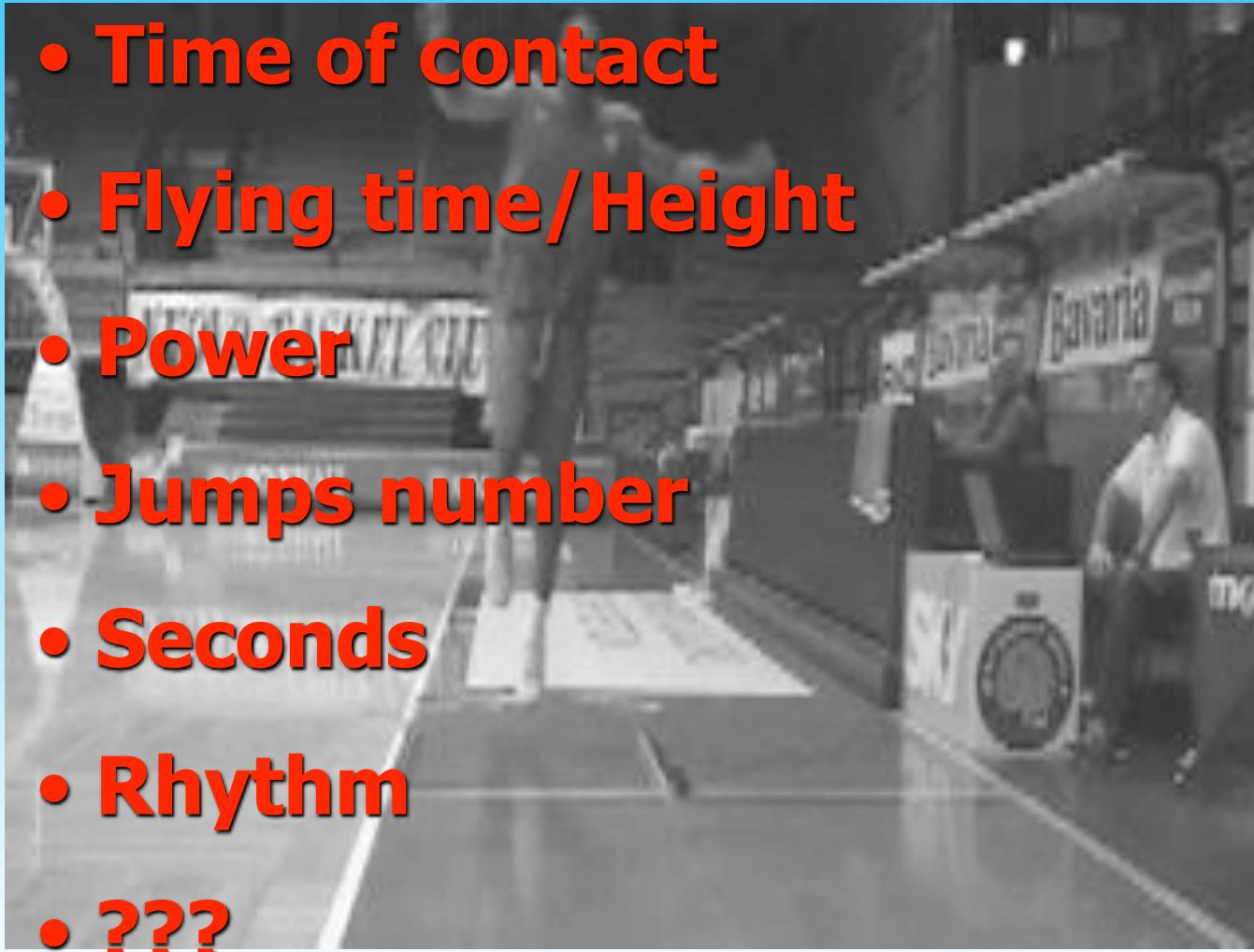


# One Legged Jump



# Numeric values are enough?

- Time of contact
- Flying time/Height
- Power
- Jumps number
- Seconds
- Rhythm
- ???



# Numeric analysis

	STIFFNESS		HOP
	contact time average	height average	height average
Right leg	0,385 msec.	19,4 cm.	25,4 cm.
Left leg	0,394 msec.	19,5 cm.	22,60 cm.
Deficit	not significative	not significative	non significative



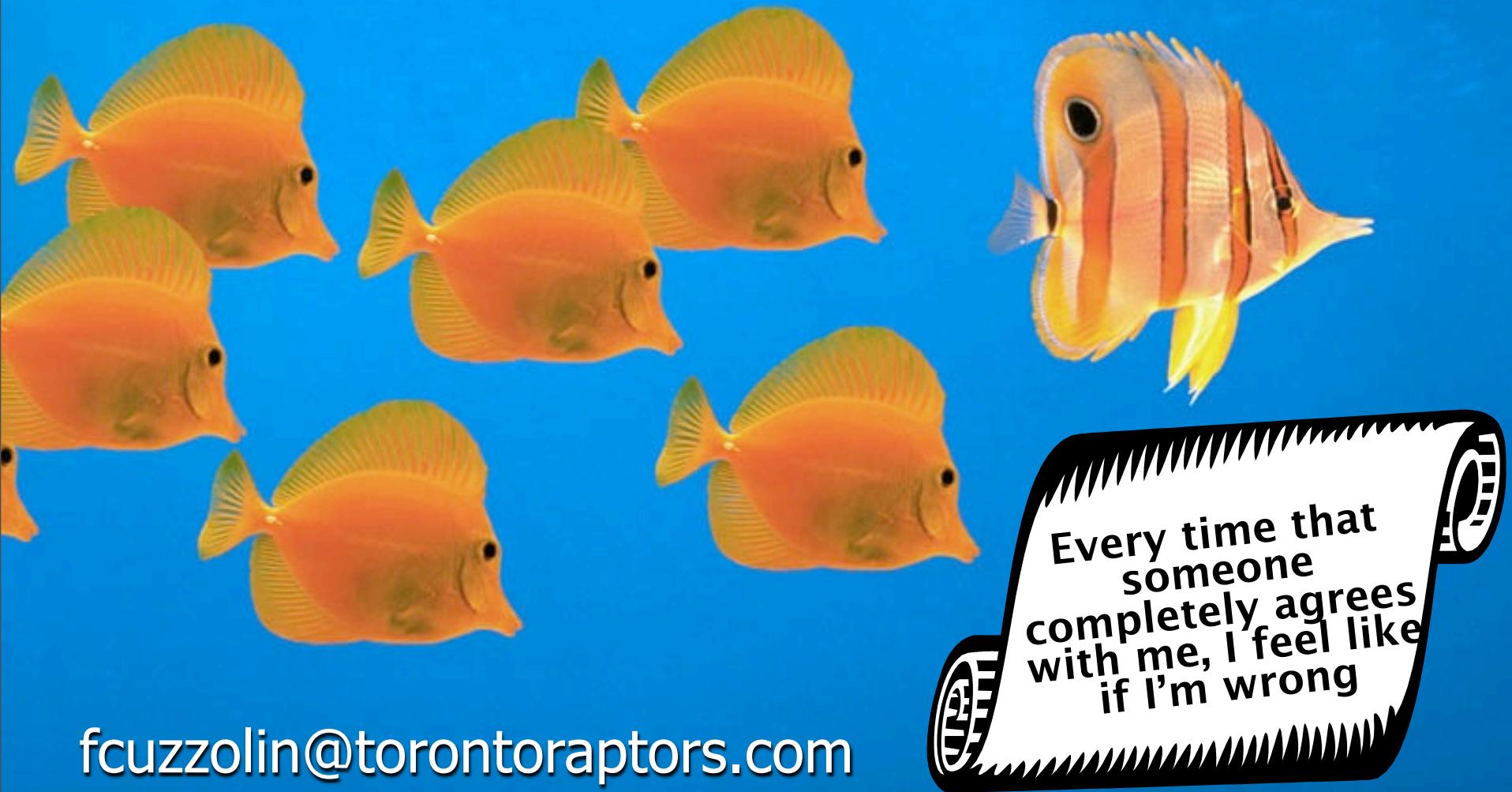
# TRAINING PRINCIPLES

- 1. Muscles are receptors before than effectors.  
(use free weights, cables, rubber bands and exercises than stimulate proprioception).**
- 2. Every movement has controlled from the CNS , train in the same way.**
- 3. Flexibility is important but don't overstretch.**
- 4. Try to use more muscles at the same time  
(work always in a standing position).**
- 5. Quality over the quantity ( few repetitions well done are always to prefer).**

# Conclusion

- Sport specific assessment has to considered players reliability and efficiency.
- Everything that can be done in this direction is very important for modern sport and is one of the main goals for conditioning coaches.
- New ideas, tests, protocols will be considered and evaluated in the next years.

# Thanks for your attention!



Every time that  
someone  
completely agrees  
with me, I feel like  
if I'm wrong

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