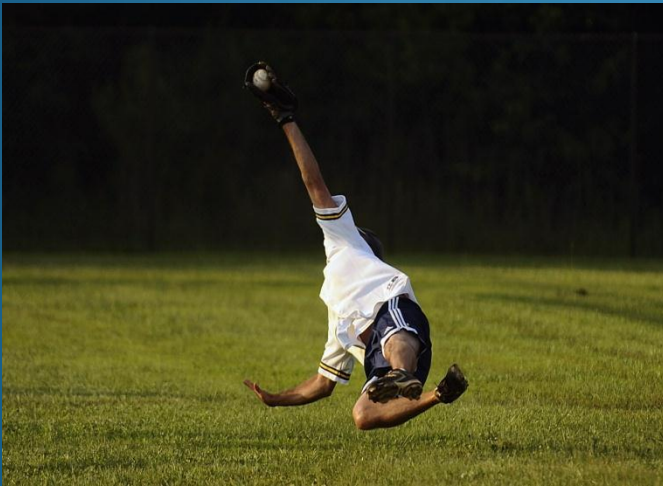


Development of technique: how, when, why

Coordination and variation in training the young athlete



Prof. dr. Matthieu Lenoir,
Dept. Movement and Sports Sciences,
Faculty of Medicine and Sports Sciences, Ghent University,
Watersportlaan 2, B-9000 Gent. Tel. 00 32 (0)9 264 63 24.
Matthieu.Lenoir@UGent.be

Overview

1. Coordination
2. Stability of coordination
3. Why is motor coordination important?
4. When do we train motor coordination?

Coordination...

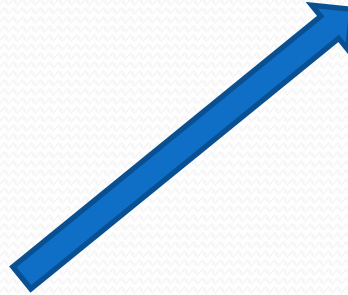
- Is the ability to organize a goal-directed action in an efficient, accurate, and consistent manner, but with enough room for flexible adaptations to the demands of the situation
- Is a matter of organisation, governed by the central nervous system
- Interacts with strength, flexibility, speed, and endurance
- Determines to a great extent
 - Whether a person will be able to master a new technical skill
 - How long this process will take for that person



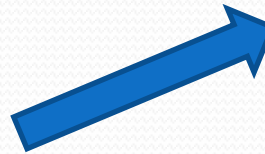
- How to evaluate general motor coordination:

Körperkoordinations Test für Kinder (Kiphard & Schilling, 2007)

- Dynamic balance



- Lateral speed jumping



- Moving sideways



- Motor Quotient (~IQ)

- 100 = normal



Is motor coordination a stable characteristic?

A characteristic of talent should ideally be relatively resistant to influences of:

- time
- maturity
- training status

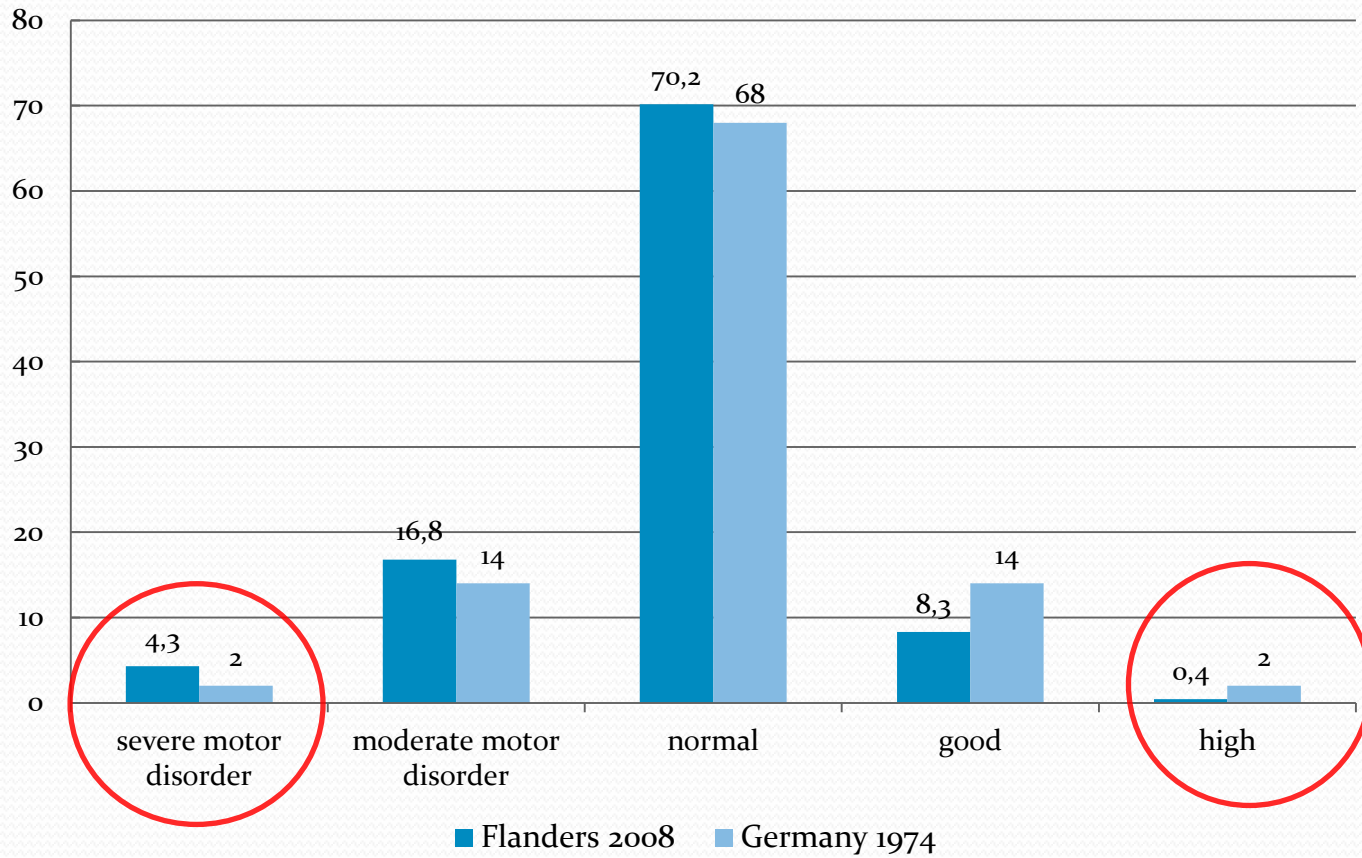
and thus allow (semi-) long term prediction of progression and/or performance

Is there a secular trend in motor coordination?

- Secular trends in anthropometry
- Secular trends in physical fitness
-
- Secular trends in motor competence?

- ~quality of the 'talent pool'

Flemish children 2008 versus norms 1974



Decrease in motor coordination 1974 – 2008

Minus 3,5% (= 1% per decade)

BUT:

Talent detection / identification is not about averages, but is a search for extremes!!

% good / very good: minus 50%

% very good: minus 80%

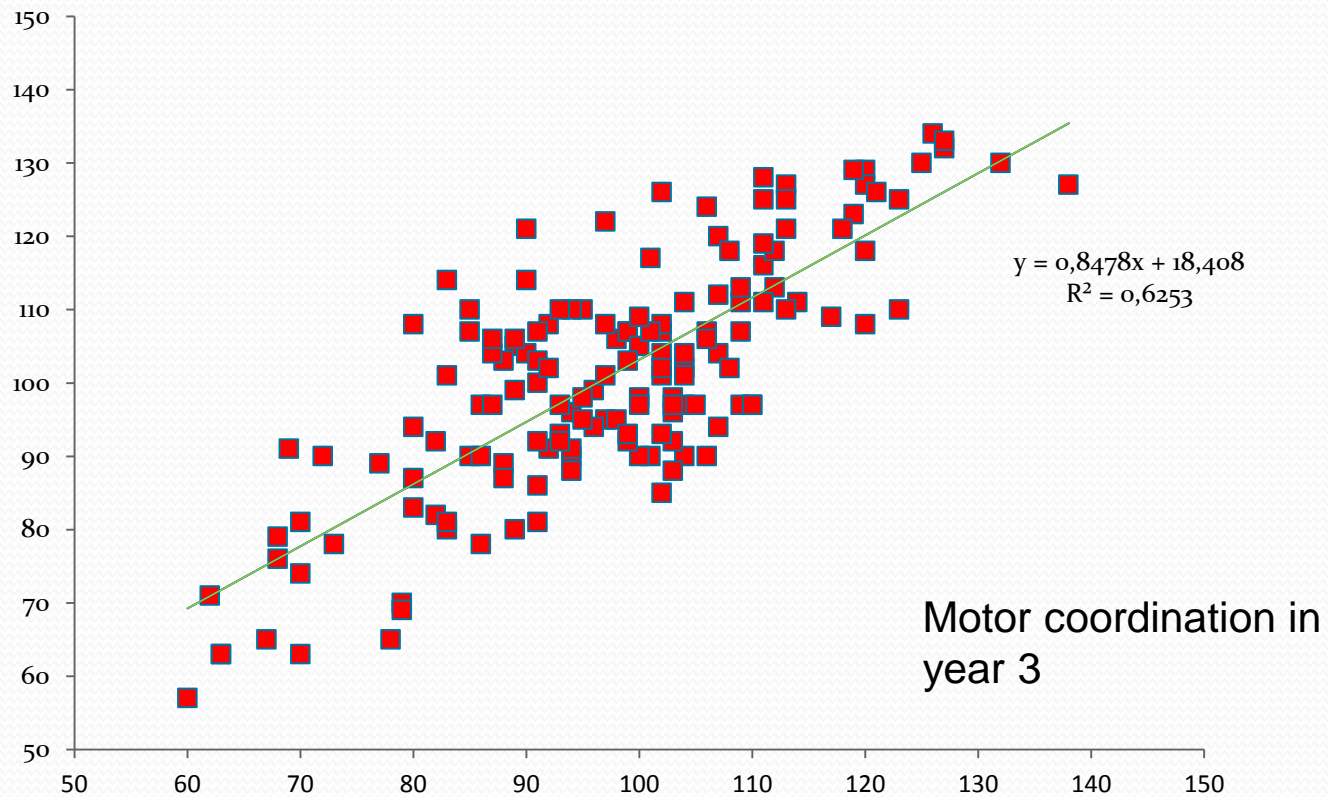
% weak / very weak: plus 30%

% very weak: plus 125%

Is motor coordination stable over time?

Motor coordination in
year 1

N = 800
U12



Is motor coordination stable during maturation?

- Effects of maturity on (in)stability of physical characteristics are well-known?
- Effects of maturity on stability of motor coordination?

Height
influence of maturity
APHV 6 months EARLIER



17 jaar

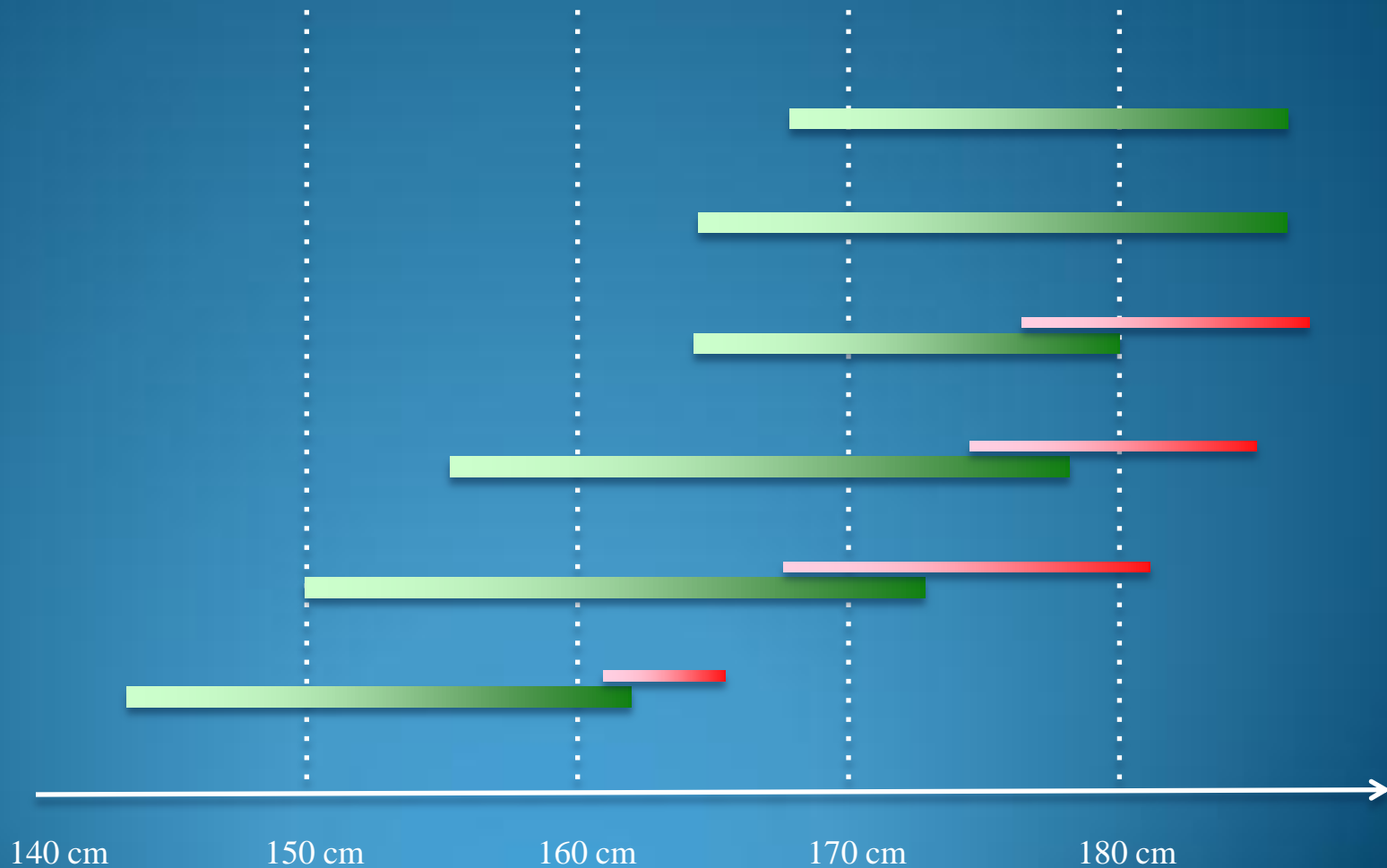
16 jaar

15 jaar

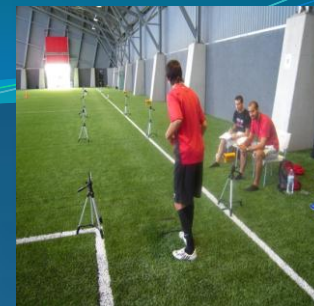
14 jaar

13 jaar

12 jaar



Sprint 30m
influence of maturity
APHV 6 months Later



17 jaar

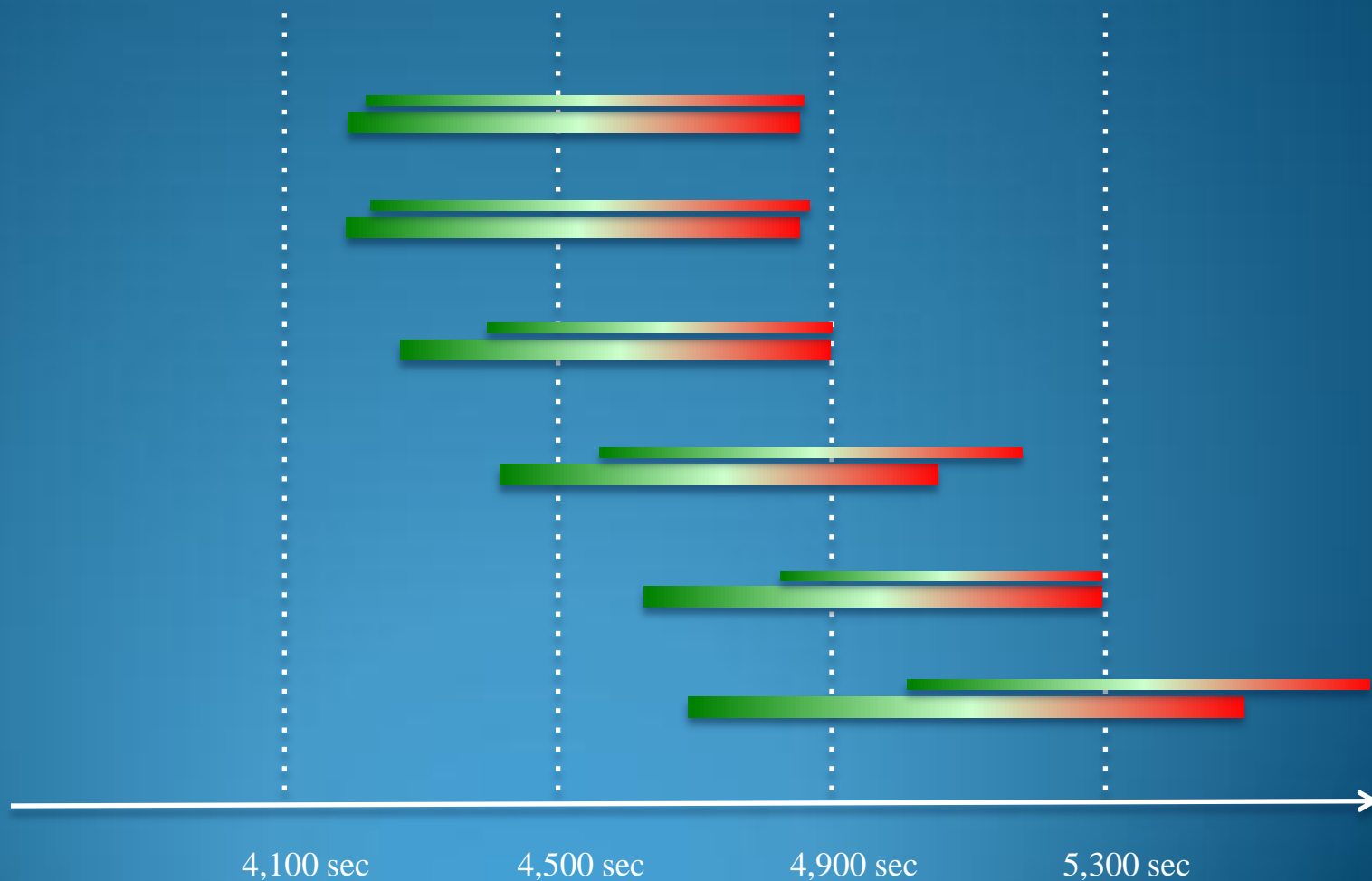
16 jaar

15 jaar

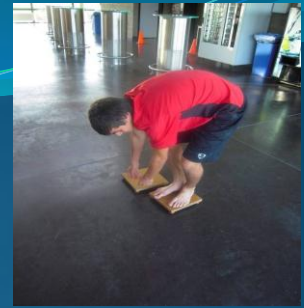
14 jaar

13 jaar

12 jaar



Moving sideways (KTK)
influence of maturity
APHV 6 months Later



17 jaar

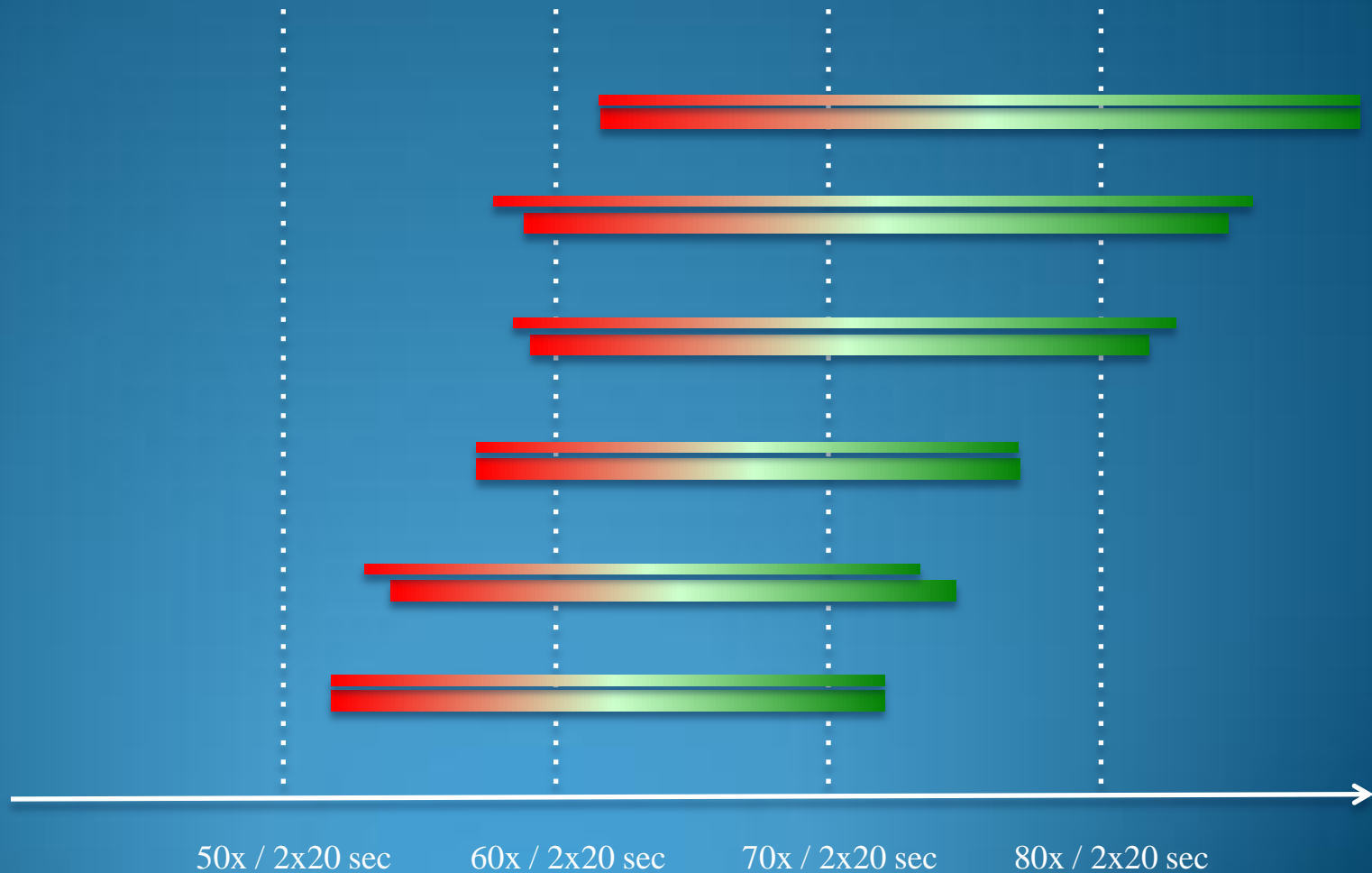
16 jaar

15 jaar

14 jaar

13 jaar

12 jaar



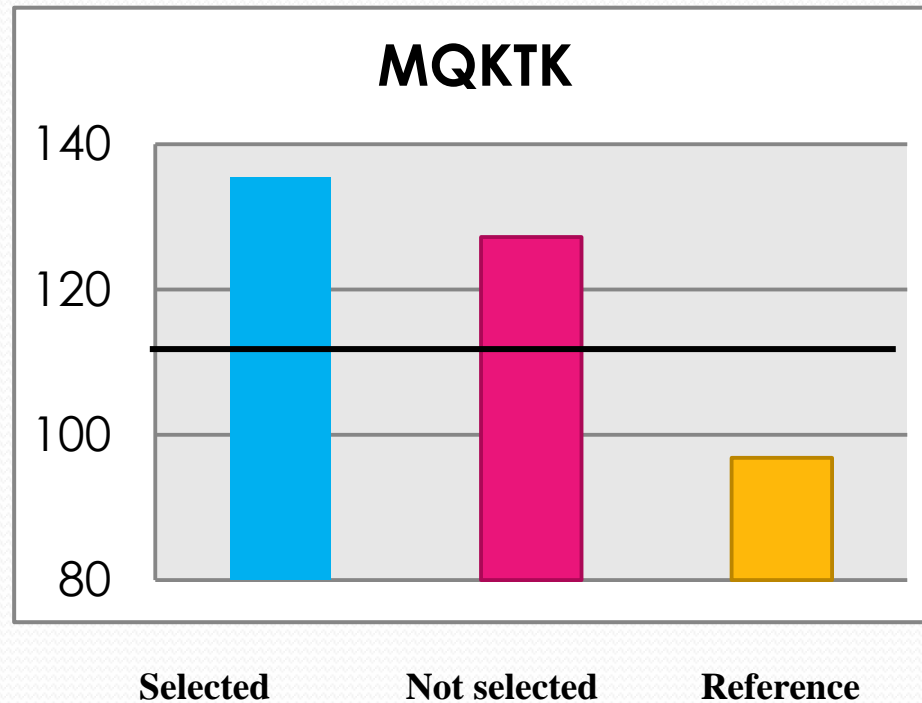
Does motor coordination distinguish between sport specific expertise?

- Case: Selection for Flemish Top Sport School Gymnastics

	Selected	Not selected	F (niveau)
MQKTK	133.4 ± 9.6	128.0 ± 11.4	20.8***
Semi-specialized skills	66.2 ± 11.2	54.8 ± 11.8	34.5***

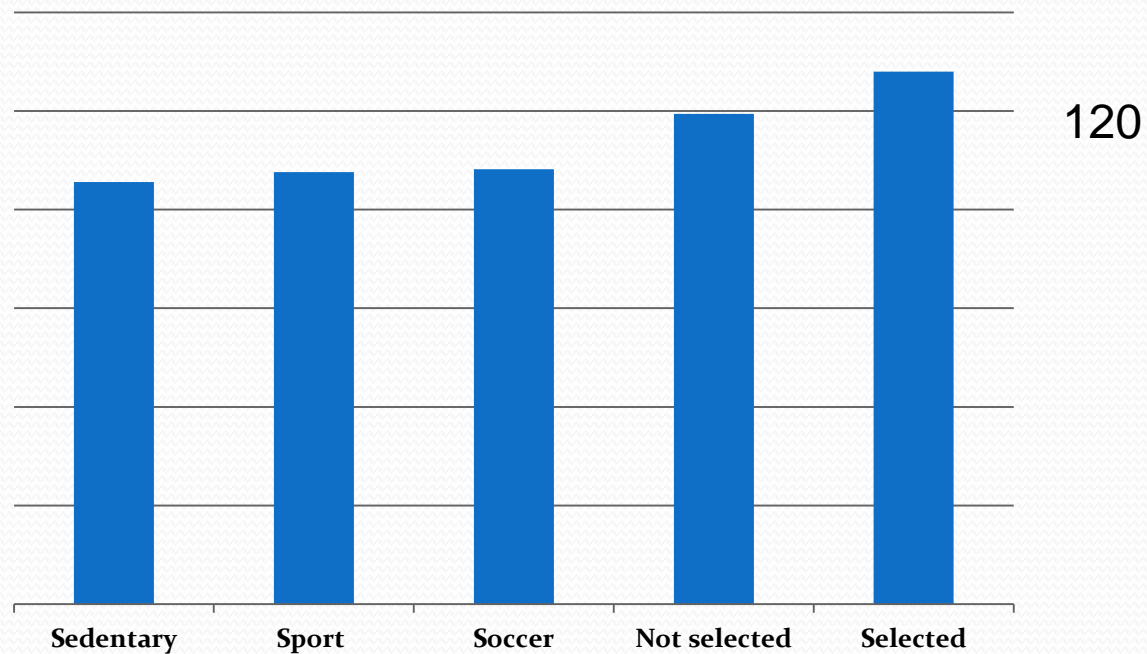
Does motor coordination distinguish between sport specific expertise?

- Selection for Flemish Top Sport School Gymnastics (7-8 yrs)

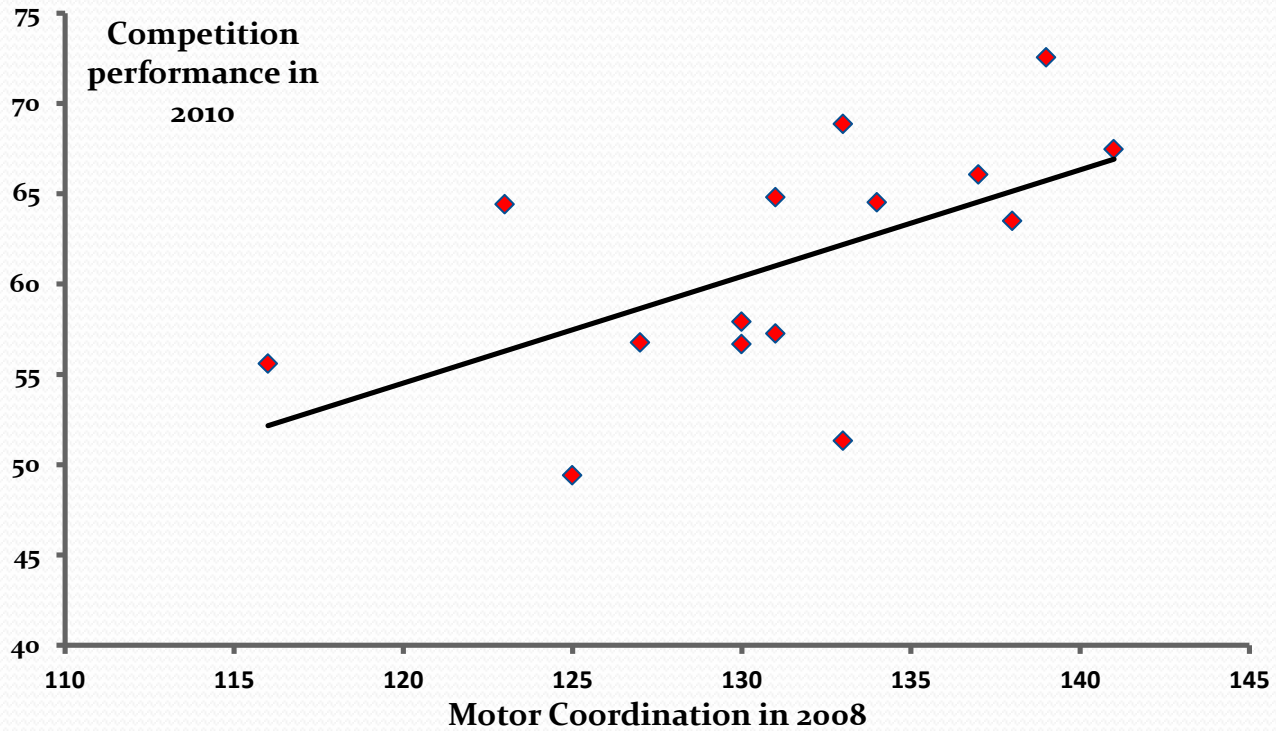


Does motor coordination distinguish between sport specific expertise?

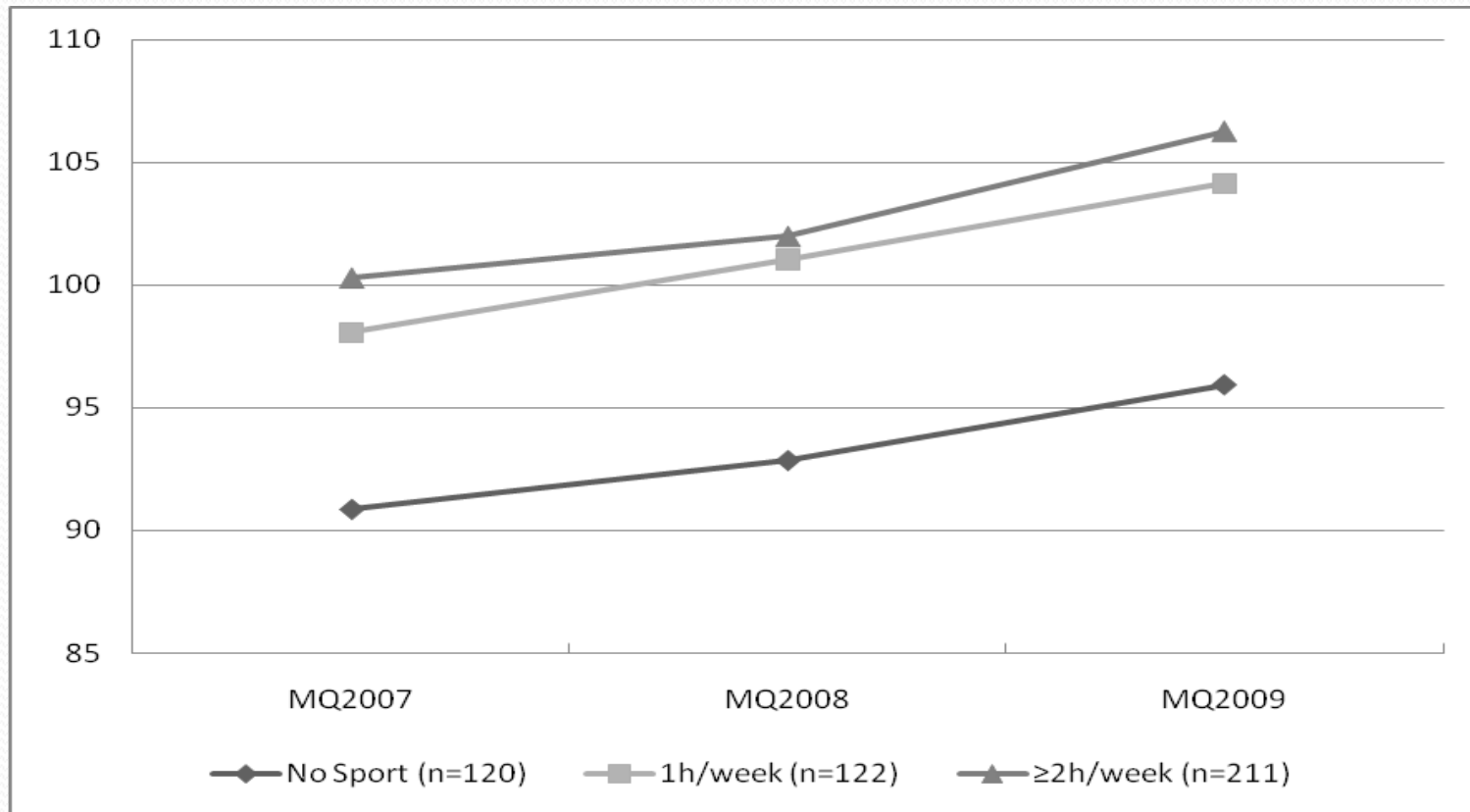
- Selection for Flemish Top Sport School Soccer (11 yrs)



Can motor coordination predict performance?

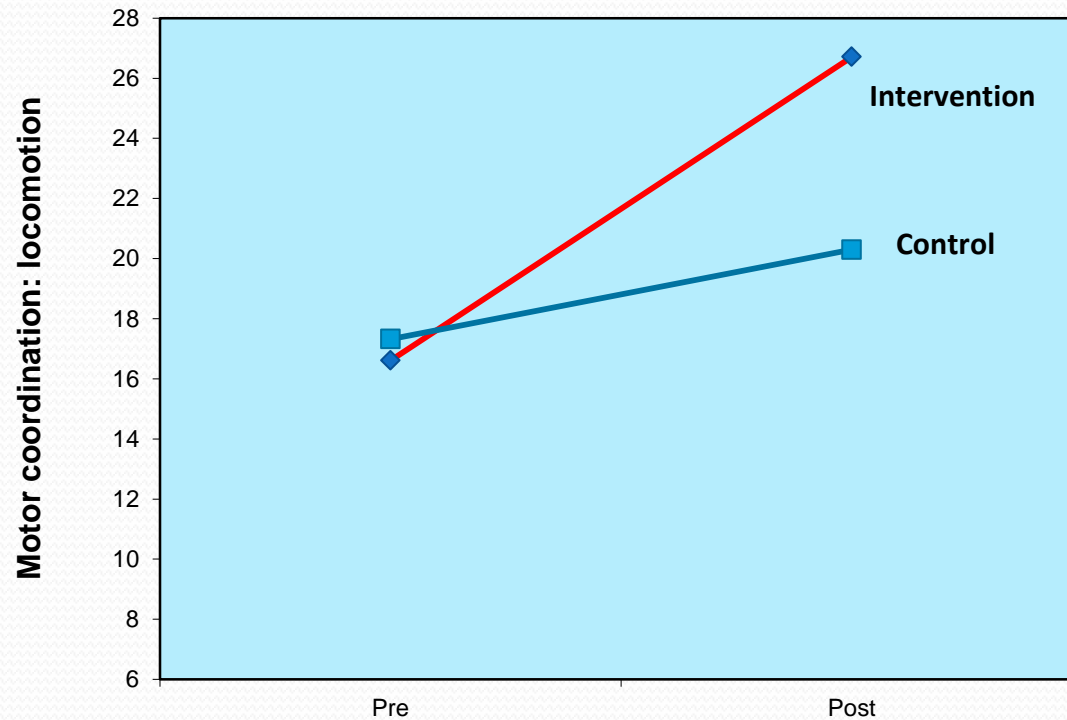


Is general motor coordination affected by sport specific practice?



When to build a solid motor coordination?

Effects of a 20 hrs. Intervention in 5-year old children met lower motor coordination

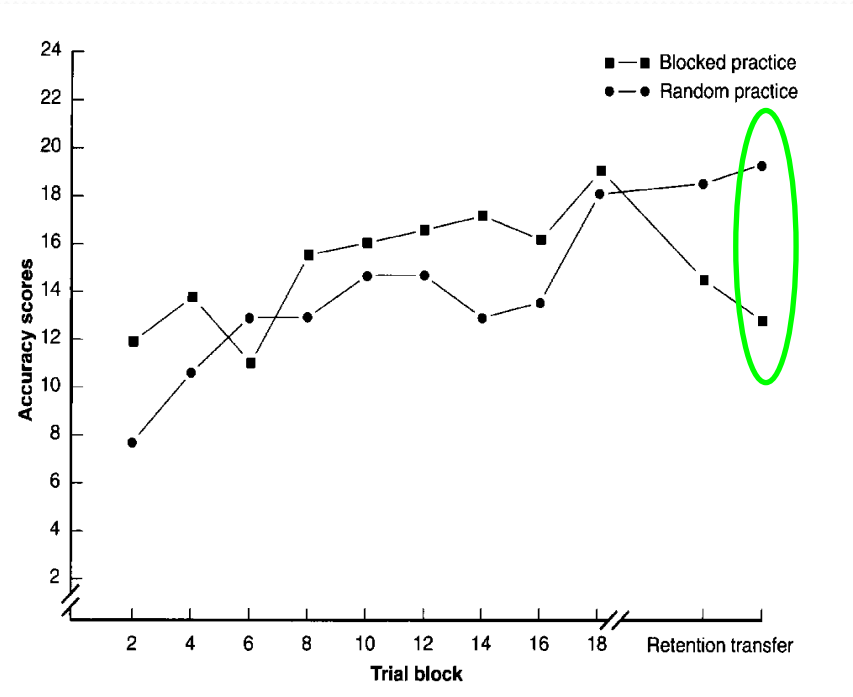


Interim conclusions

1. MC is a relatively stable characteristic
2. MC has discriminative value
3. MC has predictive value
4. MC allows an estimation of 'potential of learning'
5. MC can be evaluated by means of non-sportspecific tasks
6. The 'window of opportunity' for the stimulation of MC is in the first years of life (up to 7-8 yrs.)

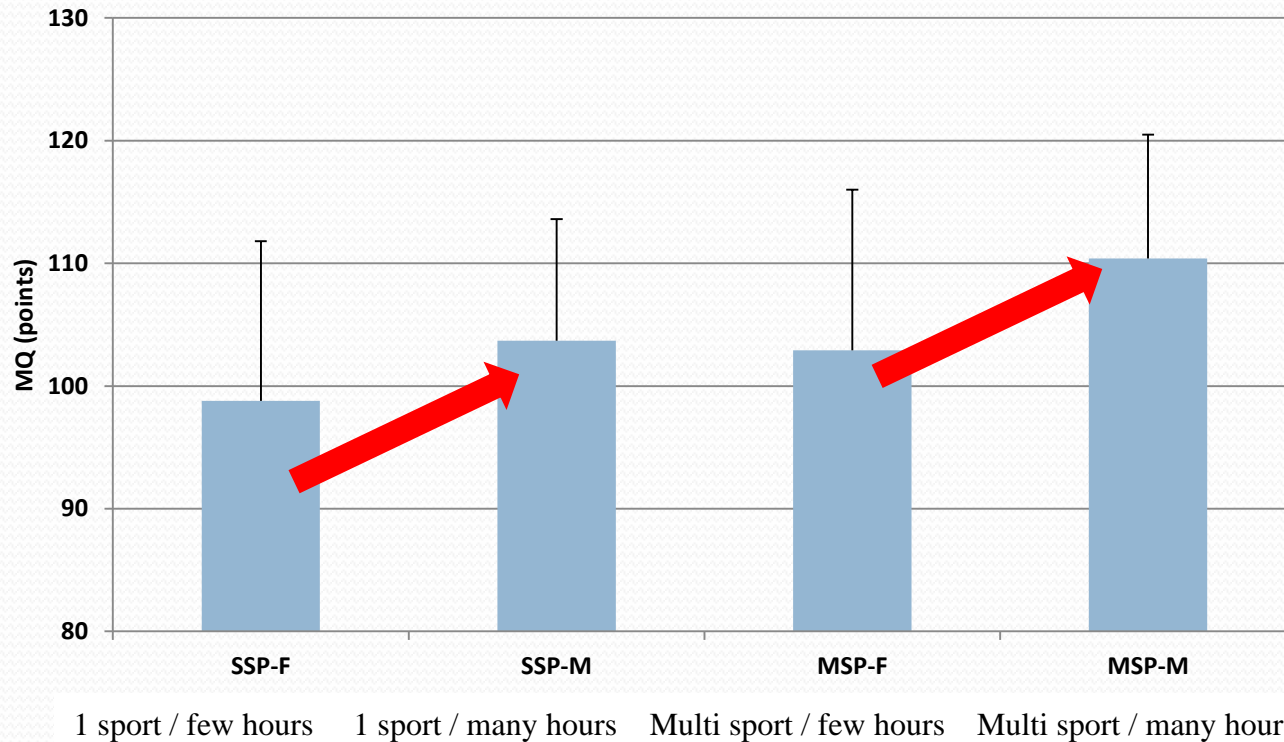
4. How to build a solid motor coordination?

- Variation and repetition are the keys to motor coordination
- Is variation in practice superior to specific skill repetition?
- Case: Goode and Magill (1986)



4. How to build a solid motor coordination?

Comparison of MC in young athletes practising a single sport / more sports for few / many hours per week (Fransen et al., J Sports Sciences 2012)





5. Applications in the field