

Speed is all you need –
Athlete profiling and innovations for top
level athletes

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Vortx

Why profiling your athlete?

- Talent scouting (explosive events)
- Individual approach (know how your athlete feels, thinks, responds and why)
- Managing of performance limitations
- Optimizing the training responses

Typing your athlete

- Muscle fiber-typing
- Brain-typing
- Chrono-typing
- Stress-typing
- Neurotransmitter-typing

Muscle fiber typing

Muscles designed for speed and power (type II or FT) or for (aerobic) endurance (Type I or ST) but always in a combination of both

Method 1:

- take a “marker “muscle” e.g. Vastus lateralis (represents the adaptation to the intensity of main propulsion methods (running, cycling, rowing, swimming, speed skating)
- take a muscle biopsy



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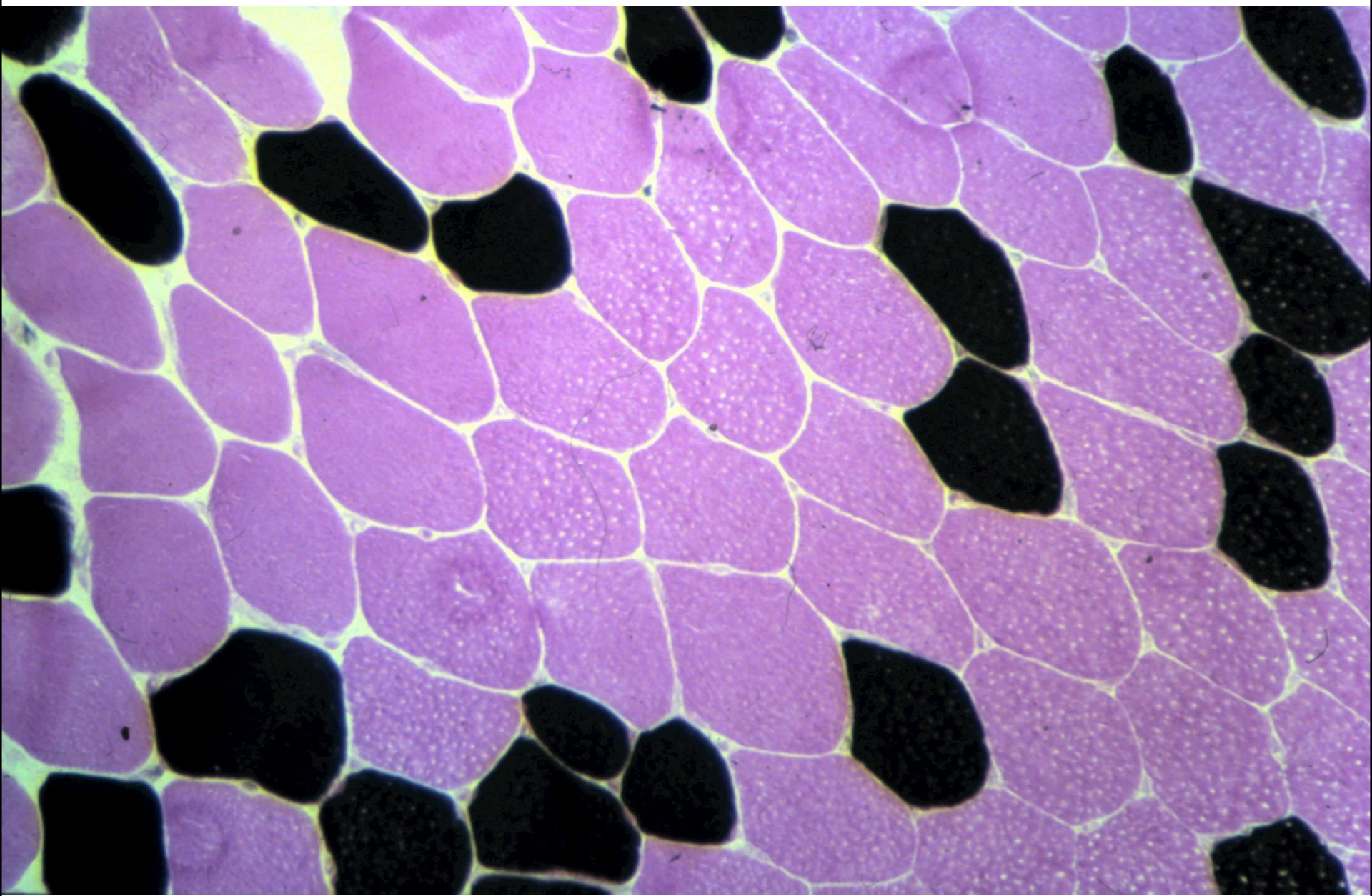
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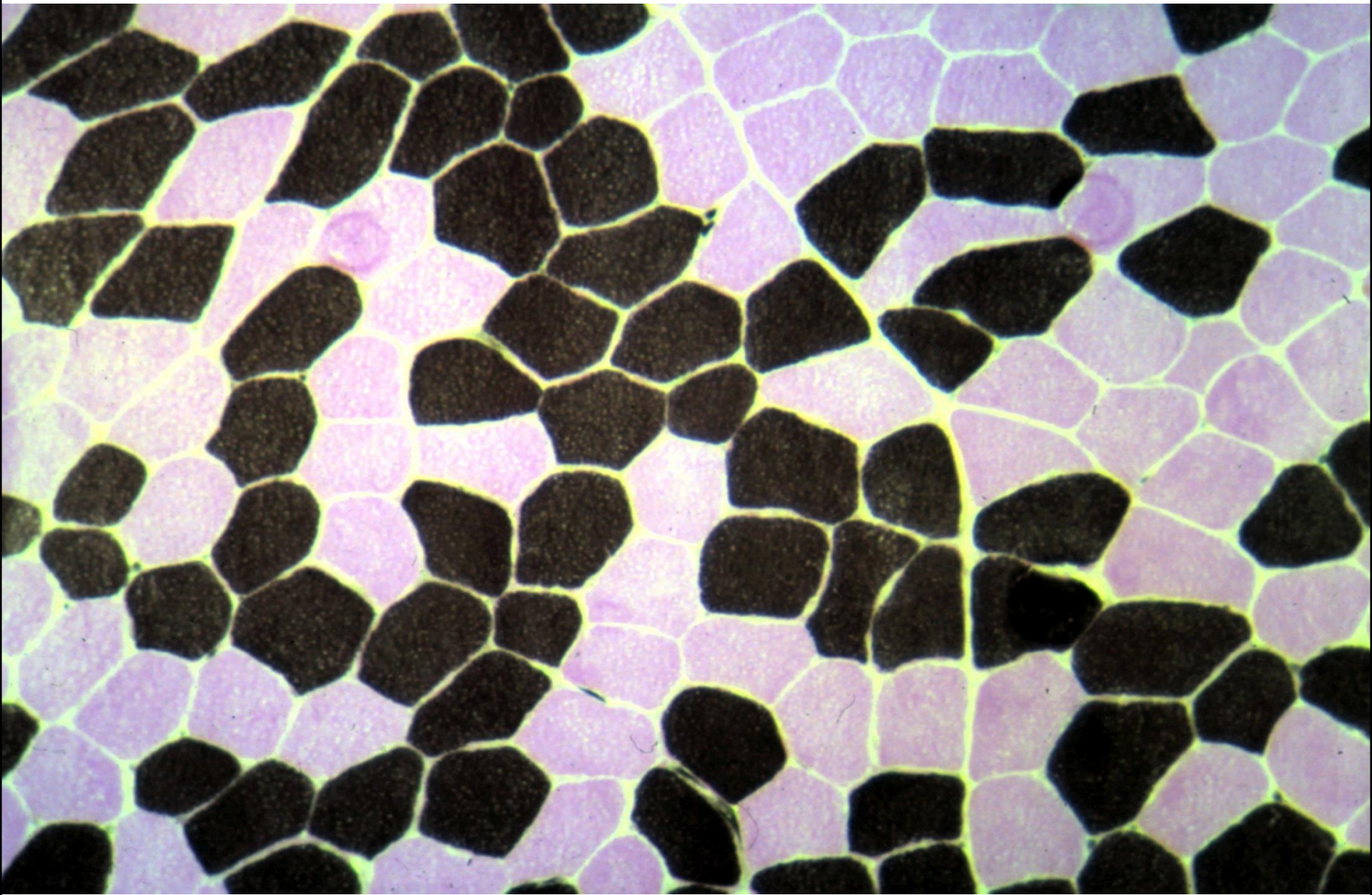
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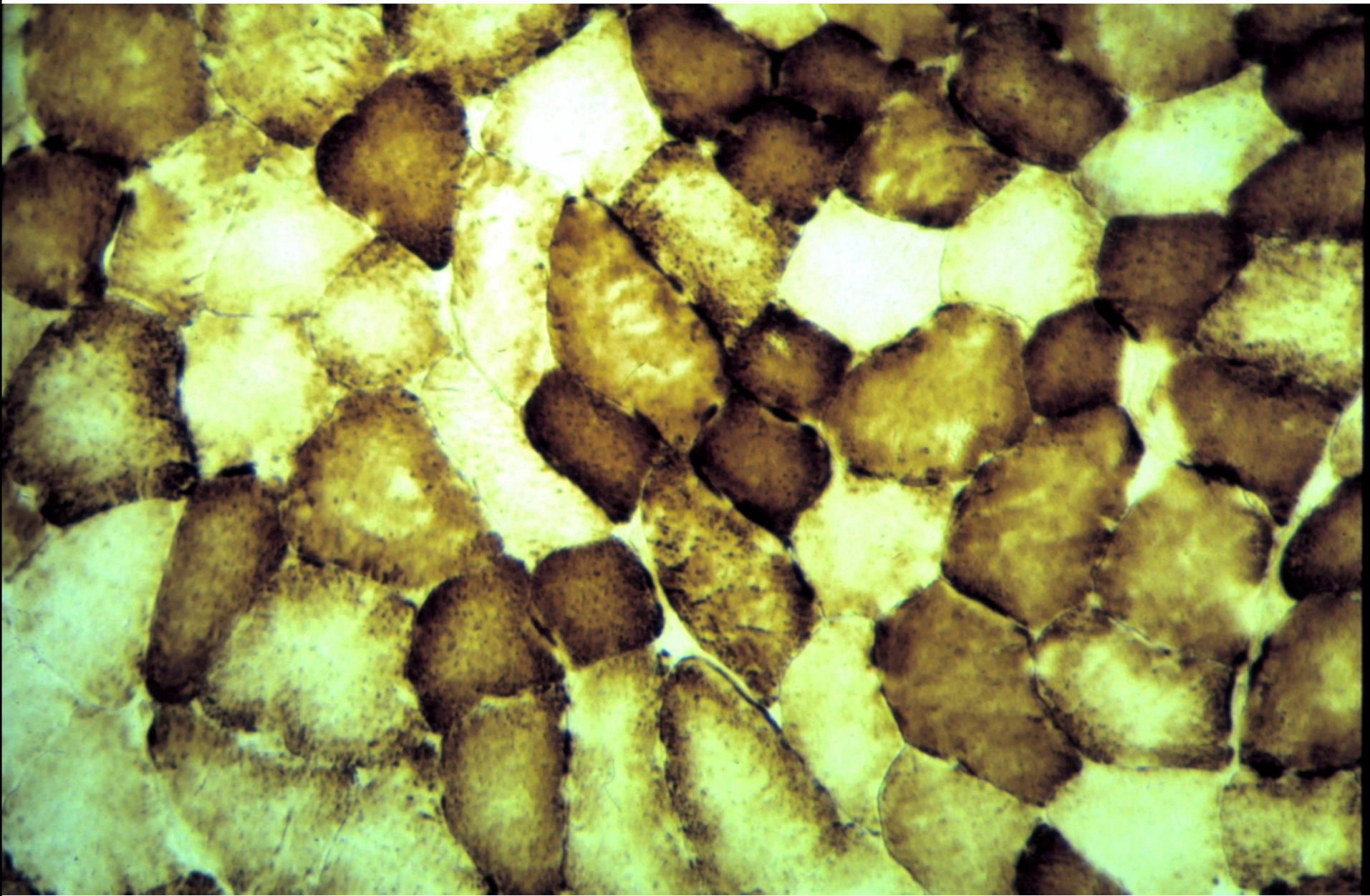
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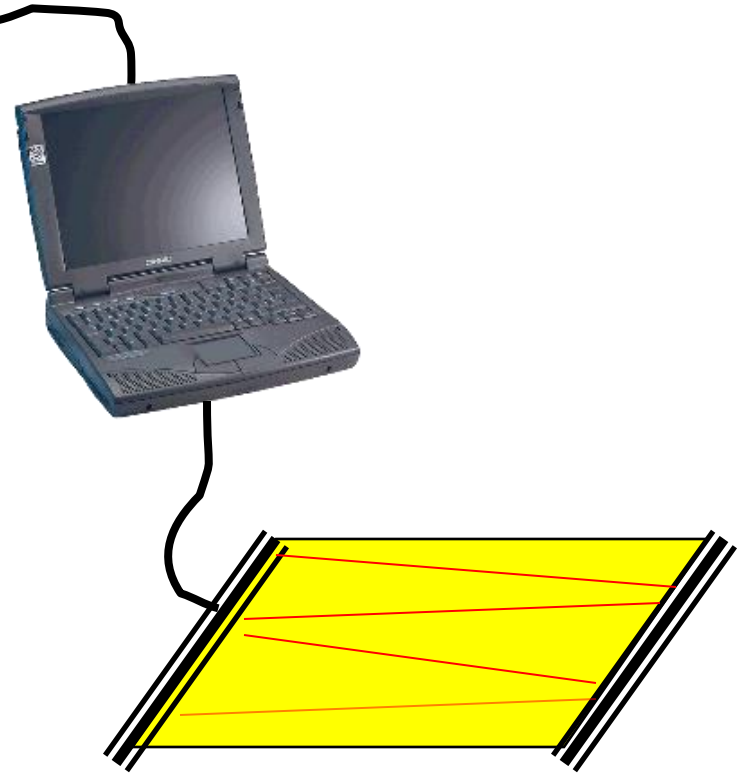
Muscle fiber typing

Method 2:

Bosco-jump test: estimating of muscle fiber type with very high reliability (1-2%)

1. **SJ** and 2. **CMJ**

Contact mat and light mat (Bosco-Ergojump)



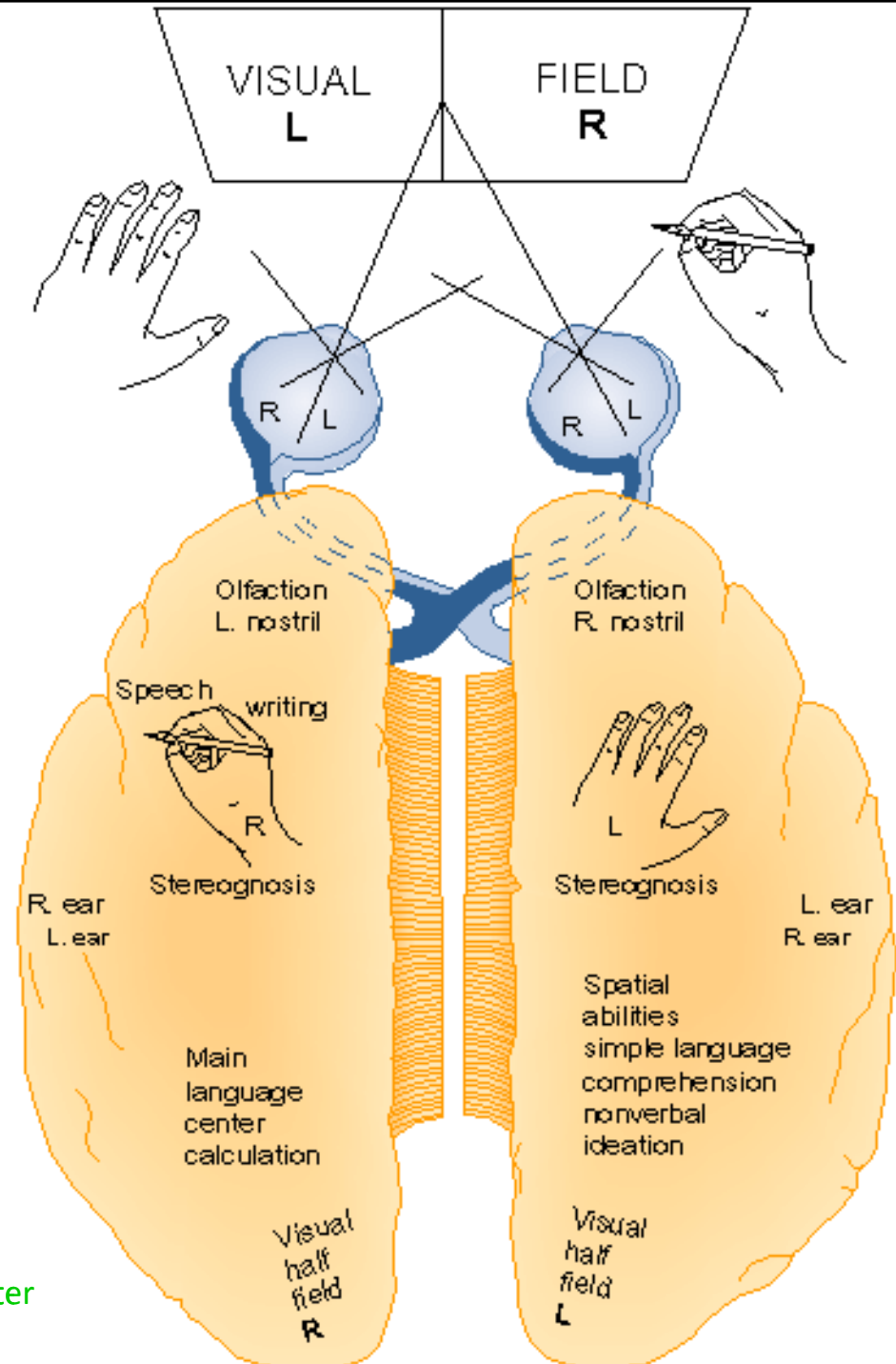
Jump test - summary

| Name | Date | Side | SJ [cm] | CMJ [cm] | Elastic [%] | CMJas [cm] | LJ bw [cm] | LJ ½bw [%] | LJ ½bw [cm] | FT [%] |
|------------------|------------|------|------------|-------------|----------------|---------------|---------------|---------------|----------------|-----------|
| Maier, Hermann | 9/02/2000 | Both | 42.9 | 49.5 | 13.2 | 57.7 | 0.0 | 0.0 | 0.0 | 55 |
| Douglas, Troy | 13/02/2001 | Both | 54.7 | 58.6 | 6.8 | 65.7 | 0.0 | 0.0 | 0.0 | 92 |
| Stevens, Patrick | 17/08/2000 | Both | 42.7 | 46.1 | 7.2 | 52.4 | 0.0 | 0.0 | 0.0 | 57 |
| Jansen, Miguel | 17/08/2000 | Both | 51.1 | 54.3 | 5.9 | 61.1 | 0.0 | 0.0 | 0.0 | 65 |
| Gortzen, Guido | 15/08/2000 | Both | 51.3 | 53.3 | 3.7 | 64.3 | 0.0 | 0.0 | 0.0 | 65 |
| Van De Goor, Bas | 15/08/2000 | Both | 40.4 | 42.4 | 4.6 | 48.7 | 0.0 | 0.0 | 0.0 | 46 |
| Bosch, Edith | 18/06/2000 | Both | 42.1 | 44.0 | 4.3 | 54.4 | 0.0 | 0.0 | 0.0 | 72 |
| Huizinga, Mark | 18/06/2000 | Both | 31.0 | 30.7 | 1.2 | 37.9 | 0.0 | 0.0 | 0.0 | 31 |
| Timmer, Marianne | 4/07/2000 | Both | 35.9 | 36.7 | 2.3 | 0.0 | 0.0 | 0.0 | 0.0 | 50 |
| Timmer, Marianne | 1/09/2000 | Both | 34.3 | 35.5 | 3.2 | 44.5 | 0.0 | 0.0 | 0.0 | 47 |
| Kempes, Edwin | 15/08/2000 | Both | 41.1 | 42.6 | 3.4 | 53.7 | 0.0 | 0.0 | 0.0 | 48 |
| Wijmeersch, Erik | 25/10/2000 | Both | 41.8 | 42.5 | 1.7 | 46.0 | 0.0 | 0.0 | 0.0 | 50 |
| Wijmeersch, Erik | 13/02/2001 | Both | 51.4 | 51.4 | 0.0 | 58.5 | 0.0 | 0.0 | 0.0 | 65 |
| Bos, Jan | 1/09/2000 | Both | 48.7 | 50.5 | 3.5 | 55.4 | 0.0 | 0.0 | 0.0 | 58 |
| Postma, Ids | 1/09/2000 | Both | 48.0 | 53.1 | 9.6 | 59.2 | 0.0 | 0.0 | 0.0 | 61 |
| Davids, Edgar | 10/09/2000 | Both | 33.3 | 35.8 | 6.9 | 46.4 | 0.0 | 0.0 | 0.0 | 37 |
| Davids, Edgar | 4/12/2000 | Both | 40.4 | 41.4 | 2.4 | 50.7 | 0.0 | 0.0 | 0.0 | 47 |
| Verkerk, Martin | 12/02/2001 | Both | 34.4 | 38.7 | 11.1 | 45.0 | 0.0 | 0.0 | 0.0 | 42 |
| Average | | | 42.5 | 44.8 | | 53.0 | 0.0 | | 0.0 | 55 |

Brain typing

Dominance of Left vs. Right hemisphere:

- EEG
- Human Information Processing Survey



Functions of the Left and Right Brain

The left brain controls:

The right half of the body
The right hand
The right visual field
Talking, reading, writing, and spelling
Speech comprehension
Temporal and sequential information processing
Keeping score of a football game
Math
Marching
Grammar
Logical and analytical reasoning
Confabulation
Perception of details

The right brain controls:

The left half of the body
The left hand
The left visual field
Emotional and melodic speech
Comprehension of music and emotion
Insight and intuitive reasoning
Visual-spatial processing
Throwing and catching a football
Riding a bicycle
Dancing
Visual closure
Gestalt formation
Perception of environmental sounds
Social-emotional nuances



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Chrono-typing

- Morning person (Lark-Lerche) vs. Evening person (Owl –Eule)



Train the athlete at his/her best time: morning person in the morning, evening person the evening!

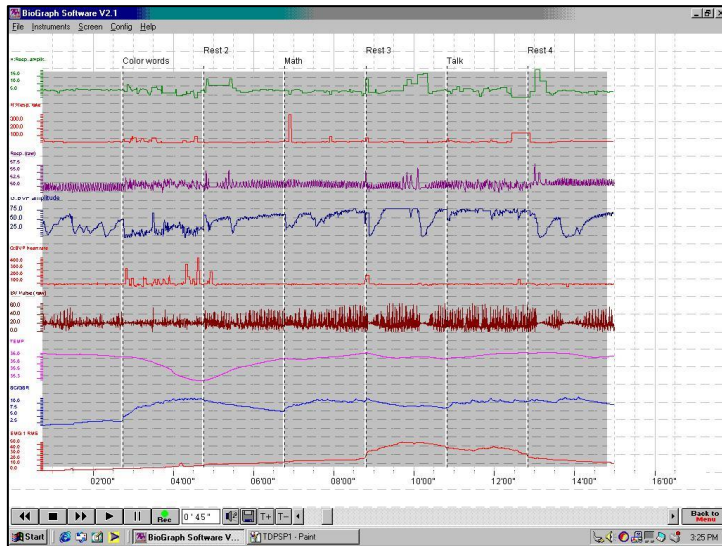
Stress-typing

- Bender: do more or less what we expect
- Breaker: cracks under pressure
- Bloomer: performs best at maximum stress

Look at results in competitions under various stress levels

Measure stress levels and stress responses

Best experience: SF operators (there's no room for second place!)



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Neurotransmitter-typing

4 major neurotransmitters systems:

- dopamine
- serotonin
- GABA
- acetyl-cholin

Important for: energy levels, motivation, mood, learning, etc.

Measuring neurotransmitters

- platelets (blood)
- cerebral bioimpedance
- questionnaire

Client bloodtest - neurotransmitter

Aanvrager
Afspr.datum
Afspraaktijd
Afspraaknummer

Vortx
06-01-14
13:46
185755

Eenheid Ref.Waarden

KLINISCHE CHEMIE

GABA in plasma

2.7 µmol/l 0.7 - 6.2

BIOLOGISCHE AMINES

CATACHOLAMINES (PLATELETS)

Dopamine

37.6 pg/10¹⁰ 17.0 - 30.0

Serotonin

69.0 pg/10¹⁰ 65.0 - 550.0

Acetyl choline

416 ng/l 390 - 560

Age: 55 Gender: Female Symptoms and treatments : Tingling/numbness in the hands/feet ;

| Cerebral neurotransmitters and thyroid response | Response scale | Suggested supplementary examinations |
|---|----------------|--------------------------------------|
| Cerebral serotonin response | | According to the clinical context |
| Cerebral dopamine and Noradrenaline response | | According to the clinical context |
| Cerebral GABA responses | | the clinical context |

Thanks for your attention!

Any questions?

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www.vortex.nl

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