



MOTOR LEARNING in TENNIS

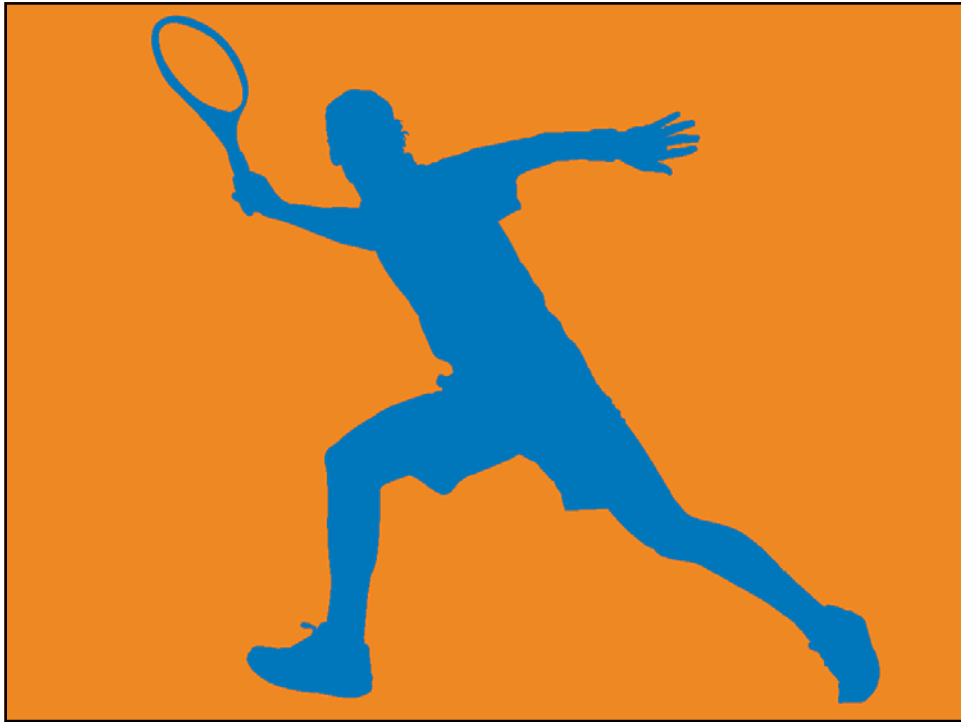
Frank van Fraayenhoven

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INTRODUCTION


- Every coach deals with (motor) learning every day;
- Coaches do not really understand how learning works;
- Specialists are starting to understand it a little bit;
- Knowing more about ML saves lots of time and improves the quality and effectiveness of training.





Familiar principles of motor learning:

- **To explain, to demonstrate and than to practise;**

The KNLTB logo is located in the bottom right corner of the slide. It features a stylized shield with a crown on top, containing various symbols, and the letters 'KNLTB' below it.



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- **Many repetitions, in order of automation;**



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- **Repeat the ideal movement (biomechanics).**



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Coaches even talked about “muscle-memory”!

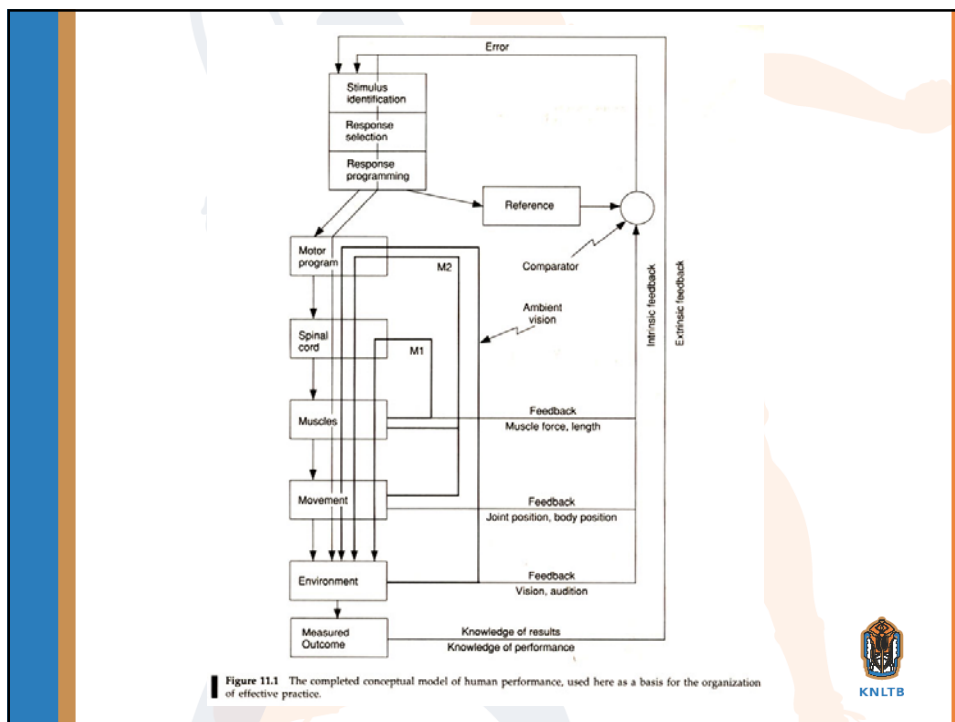


“Motor Learning & Performance” by Richard Schmidt:

Is probably “the” standard in motor learning, and
builds his complex diagram in 15 steps.

However, it is now ‘criticised’ as too ‘cognitive’.





New approaches to motor learning:

Schöllhorn (Germany);

Masters (USA);

Savelberghs (Neth);

Beek (Neth);

Mulder (Neth);

and many others.....





New directions in motor learning:

Implicit learning;
Explicit learning;
Ecological learning;
Differential learning;
Constraints-led learning.



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Modern statements about motor learning:

- **“Repeat, repeat, repeat is a very old-fashioned approach to motor learning” (Richard Schmidt/Vic Braden);**



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- “Never train the right in order to become the best” (Prof. Dr. W.I. Schöllhorn).




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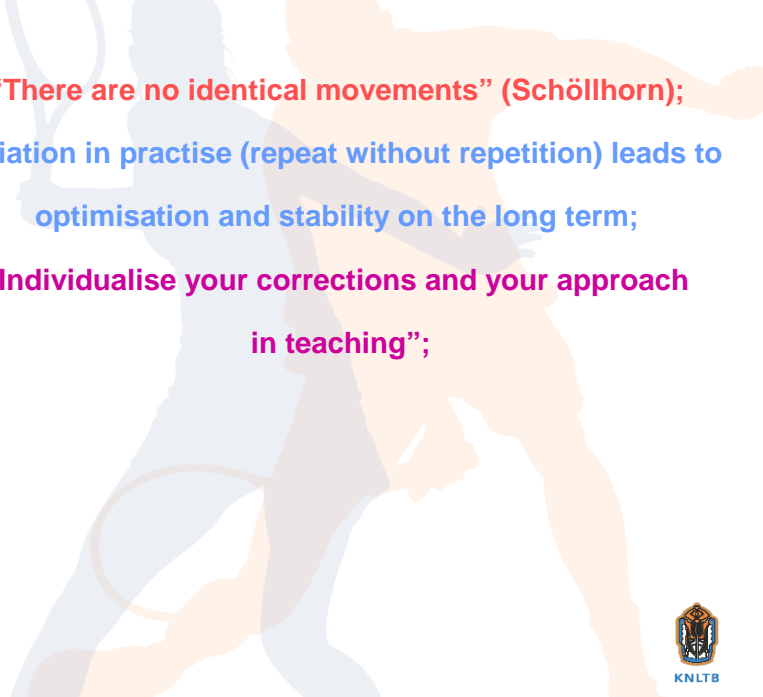

“There are no identical movements” (Schöllhorn);




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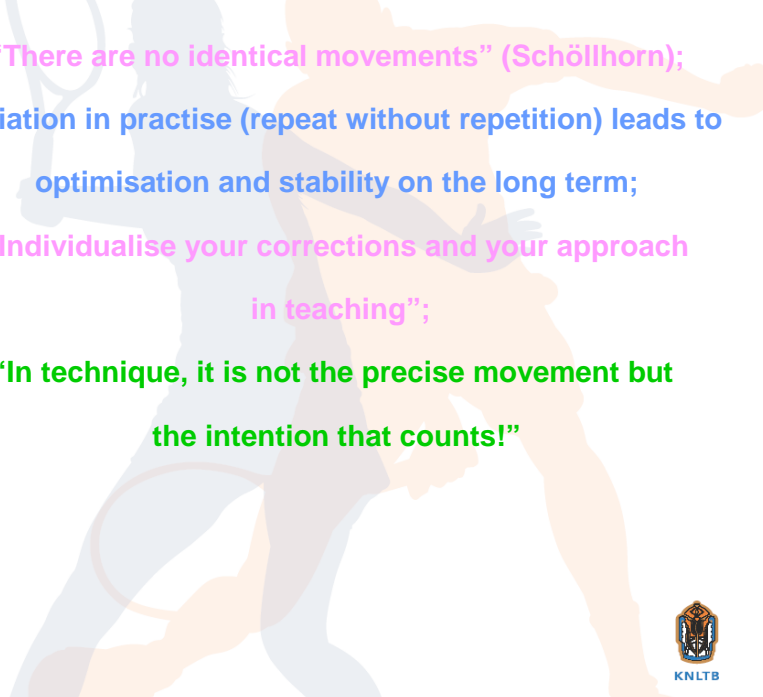


“There are no identical movements” (Schöllhorn);
Variation in practise (repeat without repetition) leads to
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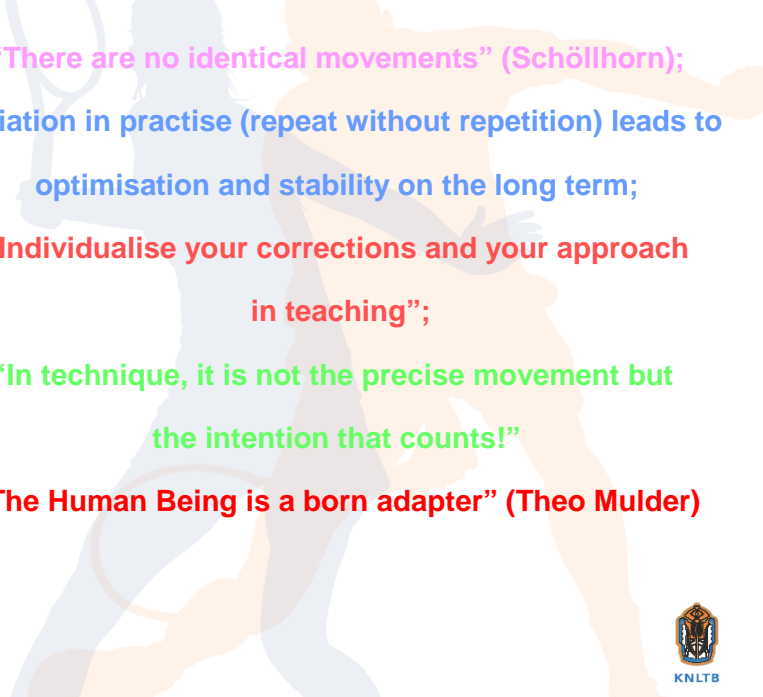



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the intention that counts!”**
“The Human Being is a born adapter” (Theo Mulder)



Since there are no identical movements, what is it we are LEARNING and HOW do we learn?

- To learn is to change;
- Learning is to reorganise;
- Learning a movement is learning a time and space related coordination pattern.



Some examples:

Signatures/autographs



Some examples:

Signatures/autographs

Turning around (two axis)





Some amazing facts (from: “What the Bleep do we know”):

- The brain is at least 1000 times faster than any computer in the world;
- The brain has over 100 billion neurons;
- The number of synapses: 60 trillion;
- 1. The connections in our brain change continually during our entire life.



In the brain:

- is a constant, continuous electric activity
- nerves that fire together, wire together
- immediate changes occur.

**The following clip is, with permission from de director,
from the movie “What the bleep do we know”.**

Look at: www.whatthebleep.com





Examples of “fire together; wire together”:

- Think of a strong memory from the past;





Examples of “fire together; wire together”:

- Think of a strong memory from the past;
- Think of a pencil.



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The situation, the environment and the emotions are essential for learning:

- **examples from re-learning to walk;**



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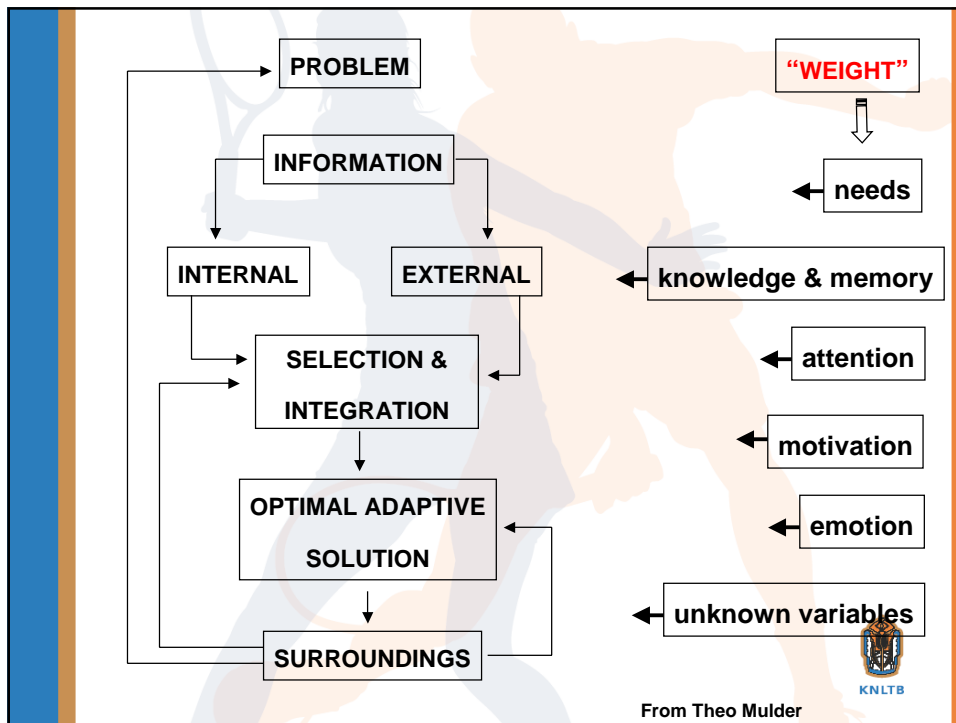
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- **examples from re-learning to walk;**
- **a moving classroom;**
- **students not feeling well.**



“Nice story, Frank!”

“But I have been doing those things all my life”.

However: there is a difference between applying a principle or activity by accident and doing those intentionally, on purpose and coming from your heart!



So what (1)?

Working on a time and space related coordination pattern, means:

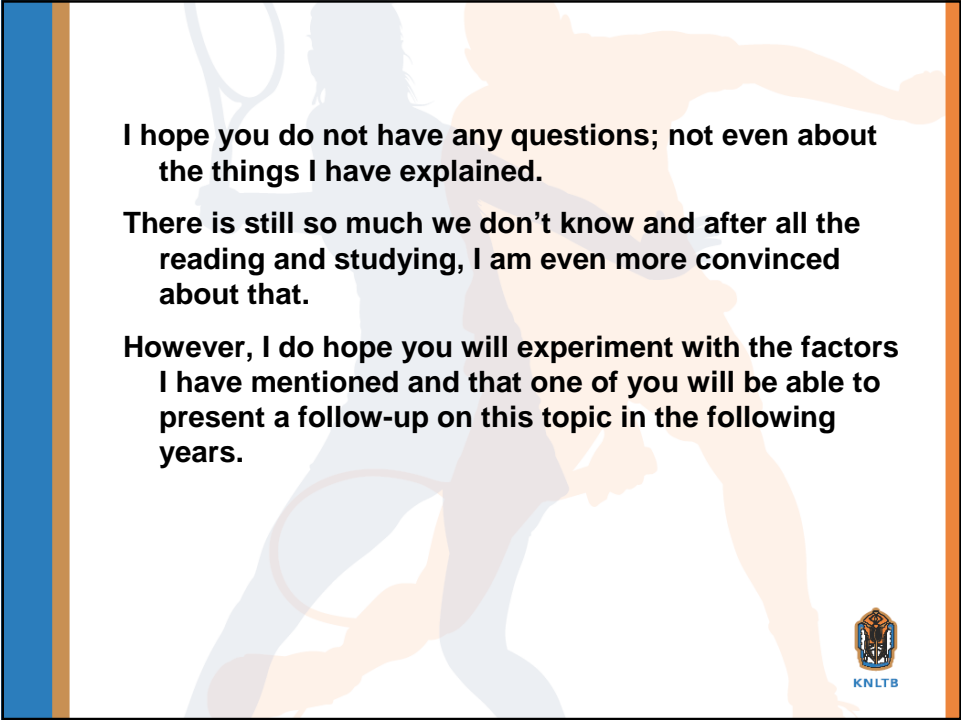
- let players discover a technique (FFF);
- teach principles not movements;
- practice services from every distance;
- practice drivevolleys from everywhere;
- play volleys with all angles and all speeds.



So what (2)?

- Use the “fire and wire”-principle optimally,
- through emotions;
 1. through environment, surroundings;
 2. through motivation;
 3. and by making it look like a match-situation.





I hope you do not have any questions; not even about the things I have explained.

There is still so much we don't know and after all the reading and studying, I am even more convinced about that.

However, I do hope you will experiment with the factors I have mentioned and that one of you will be able to present a follow-up on this topic in the following years.



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Thank you for your attention!



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