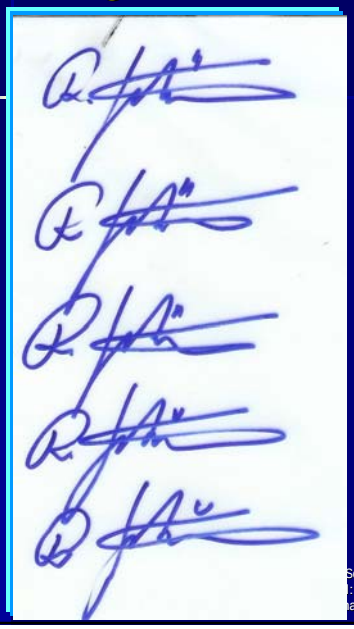
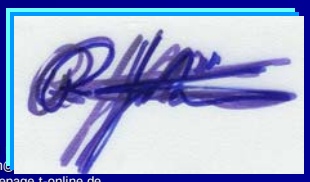
What does one mean by the principle of the not repeatability of movements? Can one carry out two completely identical movements ?

- ***The principle of not repeatability of movements*** says ***that there are no two identical movements.***
- **Too during thousand fold repetition of a simple movement in one simple situation , *there are deviations* for the previous movement.**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **A typical example is the personal *name signature.***





Schönborn - 2006 All
: richard.schoenborn@
ardschoenborn.homepage.t-online.de

- **E.g. *at the example the pistols fire* announced for Scholz, Schöner and Latash, *that the end point of a movement is achieved by a great number from combinations of the degree of freedom* of the hinges shared at movement. Accordingly, the stable final state of a movement can result from a *great number of highly variable initial positions of movement*;**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **Button, MacLeod, Sanders and Coleman have measured in 2003 during their investigation of movement *variability of basketball-free throw variable hinge angles and hinge angular velocities* with beginners and with advanced students and masters , although shoulders, elbows and wrists were only considered;**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **If one considers the high individuality from movements and the small probability in addition to be able to repeat identically a movement, appears the experiment a *closed movement* (e.g. forehand topspin) to can „insert" over a great number of repetitions *for quite doubtful.***

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **The more complicated the motions are, all the *more differentiated is the repetition course of events*.**

- **E.g. a thousand fold repetition of a forehand cross does not mean, that as a result the *forehand cross is corrected and stored as closed motions.***

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **Every forehand is indeed played so in a case cross however, *each is hit under other conditions* - higher or more deeper hitting point, with ball incoming fast or slowly, high or flatly, for a long or short ball and so forth with more or less spin, length and speed.**

- **That means that every *forehand cross is played in another situation,* that it one in the case of every forehand convert *a new situation solution*, it must offer other coordinate assumptions.**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **In the case of every forehand cross accordingly, arrives it to *one different requirement degree of freedom effort* and therefore *at different coordinate and biomechanics assumptions*.**
- **But - *the same is in the case of nonetheless e.g. a combination of forehand cross and forehand down the line!!!!!!!!***
- **It is called it after N. A. Bernstein: *„Practice are the same as repetition, without to do that a second time !"***

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **Therefore, one can not speak of a computer similar storage of a stroke direction but can speak *of a storage of adaptability to innumerable situation solutions!***
- **A top player can realize a much faster *list of new programs* on account of the large great number on stored models just now too in unknown, unexpected and difficult situations;**
- **Arrangement with *car rally* drivers;**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **Concentration must be guided at *the precise carrying out of the stroke* in the respective situation with relevant ones result – *to reach the projected target face.***

- ***Concrete learning aim* is further it, *to optimize the core models for situation suitable motions.* That is: *Core models* must be *refined, vary* and must be *consolidated flexibly* in their structure!**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **The art or the secret of the optimal carrying out of a movement is *the coordination of all shared structures in a given situation at required time.***

- **That means that not the pure movement as such ones but *the situation solution is the destination* of every movement task.**

- **However, every situation solution is dependent on *quality of the variable coordination ability.***

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

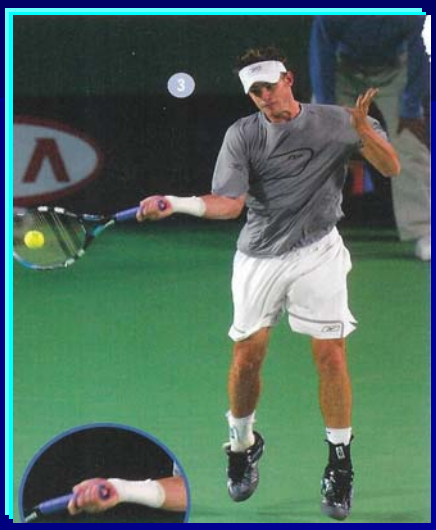
- ***Not movements should be learn and train*** **but for thanks of coordinate qualification and corresponding variation and experience spectrum must be *task and problem solutions* from beginning developed.**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

www.richardschoenborn.homepage.t-online.de

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

This is the usual forehand position



Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

www:richardschoenborn.homepage.t-online.de

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- If we go out from that, that ***completely identical situations*** can no occur in the same form second time, ***then must we taking distance from the classical form the so-called inserting (loop patterns) of skills .***

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- Therefore must one work from beginning on ***wide coordinate ability level*** to create an so-called ***coordinate over potential.***
- One manages such ***over potential*** however particularly through a precise ***variation of the movement tasks.***
- One must attempt to offer a ***variety of movement tasks*** to the player so early as possible.

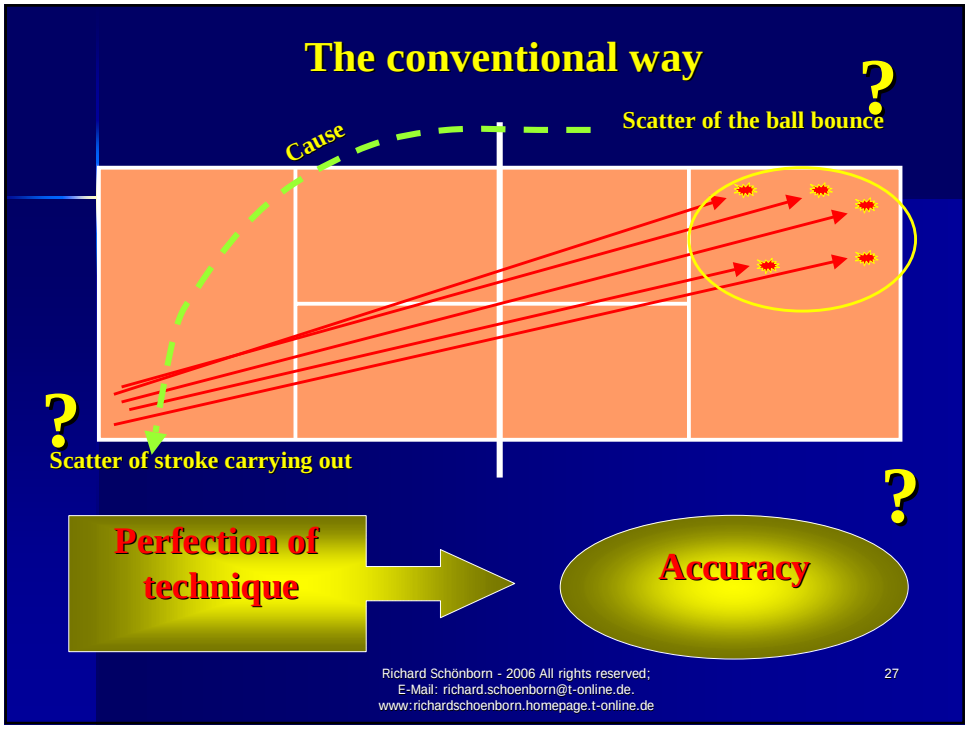
Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

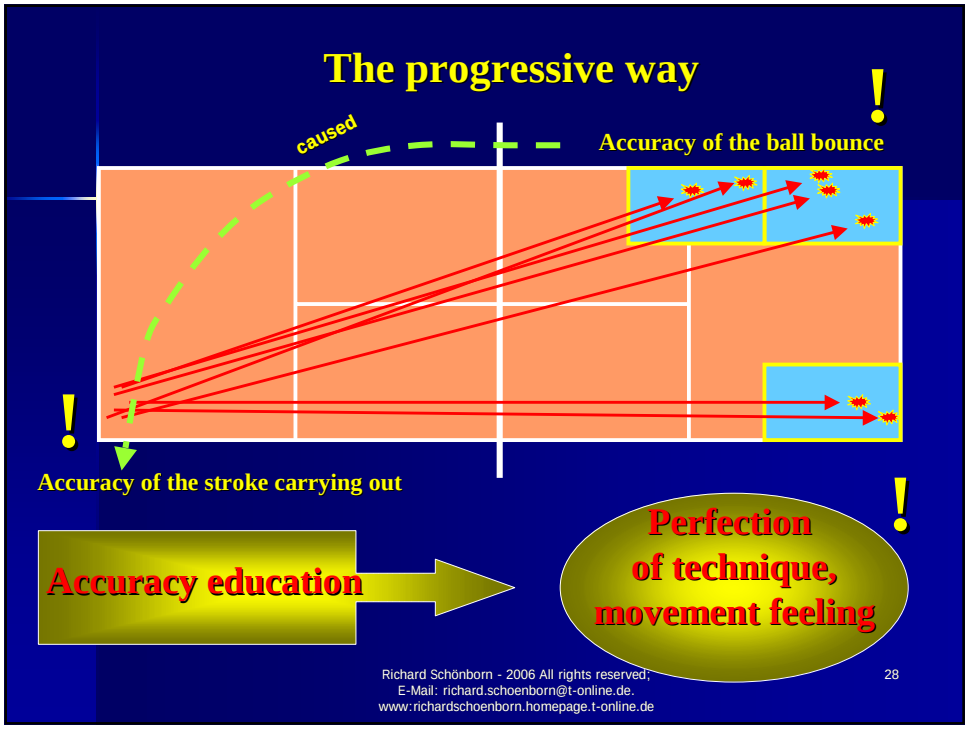
- On account of the facts stated first, ***it is to be adapted to quite reconsider necessarily the training contents*** and the requirements that contemporary results of sport science.
- ***Through a numerous simple repetition of a stroke into an only direction*** (e.g. cross) in simple situations becomes the expected result - ***the perfection of the stroke direction and of the quality of a stroke not indeed achieved.***
- In the case of repetition of a kind of stroke we must deal with ***repetition of the situation solution*** and therefore with the ***automatization of the variation ability*** in the case of simultaneous ***perfection of stroke accuracy.***

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de
www:richardschoenborn.homepage.t-online.de

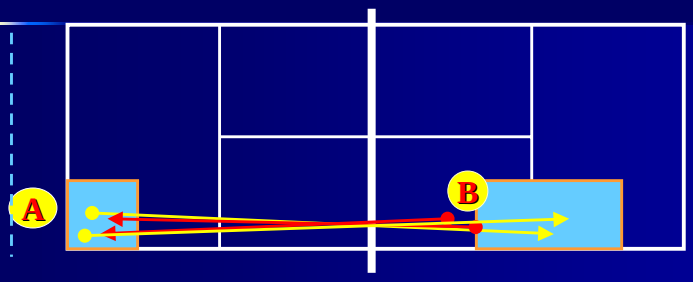
- Once again Bernstein: ***„Practice: with it is not meant the repetition of a particular task again and again, but the repetition of the solution of this task" .***
- ***It means a reversal in the conventional training practice!***
- ***In order to express concretely it at an example*:** A short passing shot cross does not become cross in perfection by the eternal practicing of a forehand topspin cross but ***by practicing the passing shot situation*** that however is different during every repetition.

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de


The conventional way
?
Scatter of the ball bounce
Cause
?
Scatter of stroke carrying out
?
Perfection of technique
Accuracy
Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de
27


The progressive way
!
Accuracy of the ball bounce
caused
!
Accuracy of the stroke carrying out
!
Accuracy education
Perfection of technique, movement feeling
Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de
28

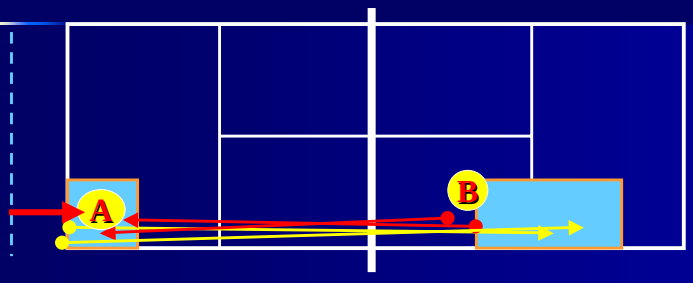
➢ Drill 1



1. **Both play down the line:**
   - **Player A play all strokes only with forehand in the target;**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

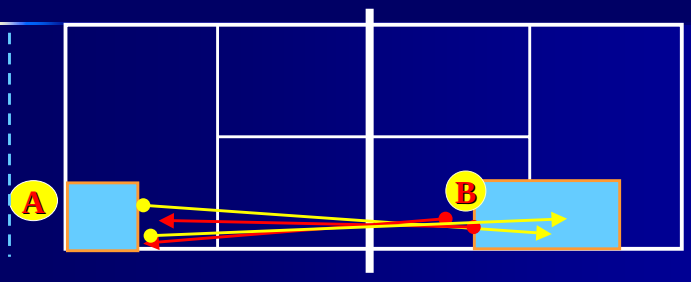
➢ Drill 2



1. **Both play down the line:**
   - **Player A moves in the target and play only forehand in the target;**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

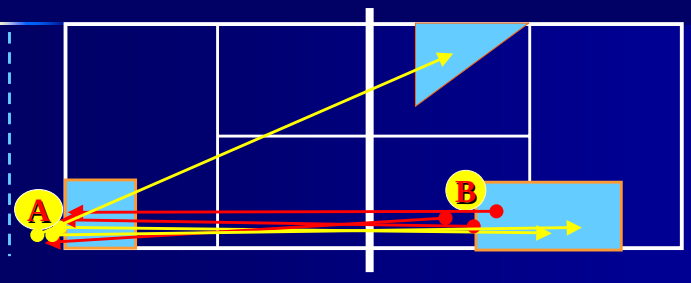
➢ Drill 3



1. **Both play down the line:**
   - **Player A play all strokes only with forehand in the target;**
   - **Player A must play all strokes only on the rise;**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

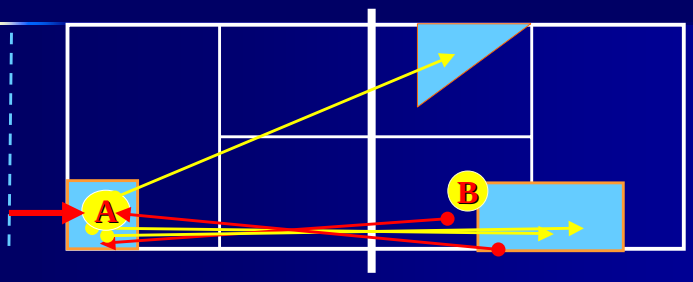
➢ Drill 4



1. **Both play down the line:**
   - **Player A play only forehand - two times down the line, third time cross court short;**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

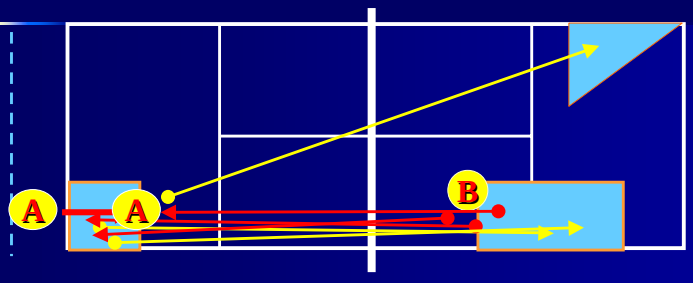
➢ Drill 5



1. **Both play down the line:**
   - **Player A play only forehand;**
   - **Player A move in the target and play only forehand - two times down the line, third time cross court short;**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

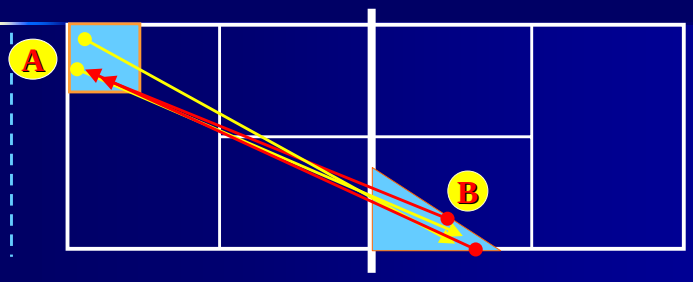
➢ Drill 6



1. **Both play down the line:**
   - **Player A play only forehand two times down the line;**
   - **Player B play short;**
   - **Player A play must move forward and must hit the third shot cross court on the rise deep as an winner;**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

➢ Drill 7

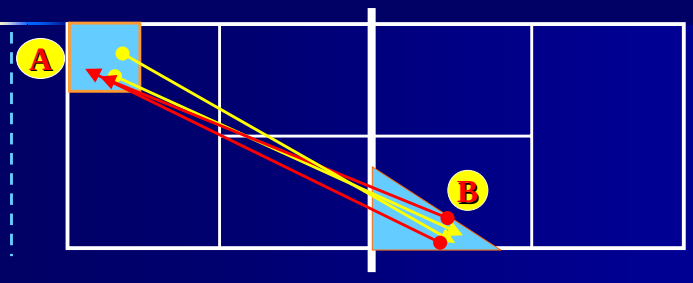


1. **Both play cross court:**
   - **Player A play only forehand from the backhand side;**
   - **Player A play only forehand cross court in the target;**
   - **Player B play cross court;**

Richard Schönborn - 2006 All rights reserved;

E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

➢ Drill 8

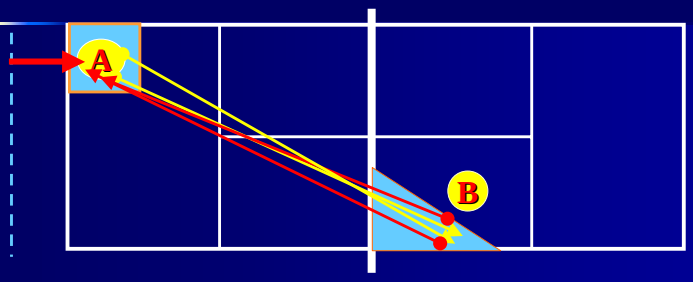


1. **Both play cross court:**
   - **Player A play only forehand from the backhand side;**
   - **Player A play only forehand cross court on the rise;**
   - **Player B play cross court;**

Richard Schönborn - 2006 All rights reserved;

E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

➢ Drill 9

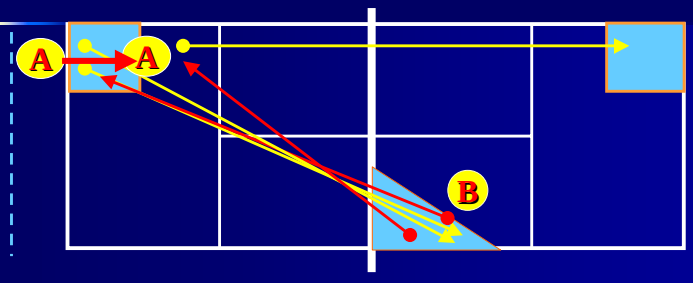


1. **Both play cross court:**
   - **Player A move in the target and play only forehand from the backhand side;**
   - **Player A play only forehand cross court;**
   - **Player B play cross court;**

Richard Schönborn - 2006 All rights reserved;

E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

➢ Drill 10

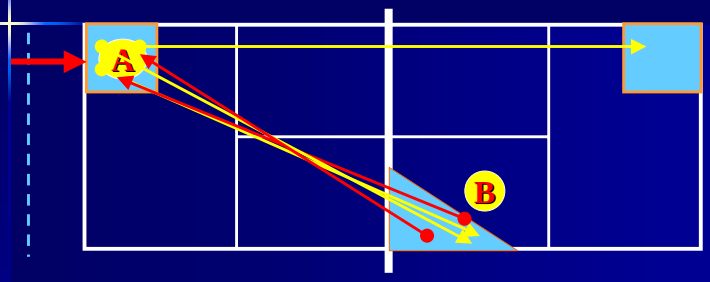


1. **Both play cross court:**
   - **Player A play only forehand from the backhand side;**
   - **Player A play only two time forehand cross court;**
   - **Player B play cross court and the second or third shot short;**
   - **Player A must move forward and must hit a forehand winner deep down the line;**

Richard Schönborn - 2006 All rights reserved;

E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

➢ Drill 11

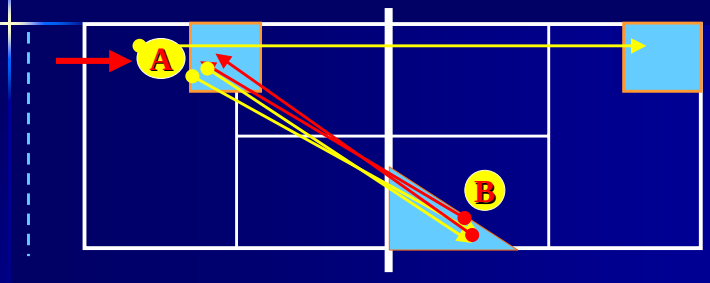


1. **Both play cross court:**
   - **Player A play only forehand from the backhand side;**
   - **Player A move in the target and play only two time forehand cross court;**
   - **Player A must must hit a forehand winner deep down the line;**

Richard Schönborn - 2006 All rights reserved;

E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

➢ Drill 12

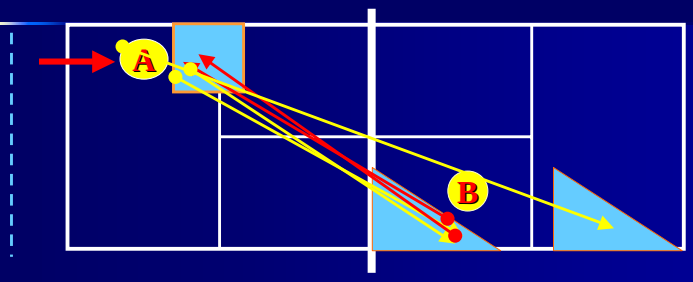


1. **Both play cross court:**
   - **Player A play only forehand from the backhand side;**
   - **Player A move forward and play only two time forehand cross court;**
   - **Player A must must hit a forehand winner deep down the line;**

Richard Schönborn - 2006 All rights reserved;

E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

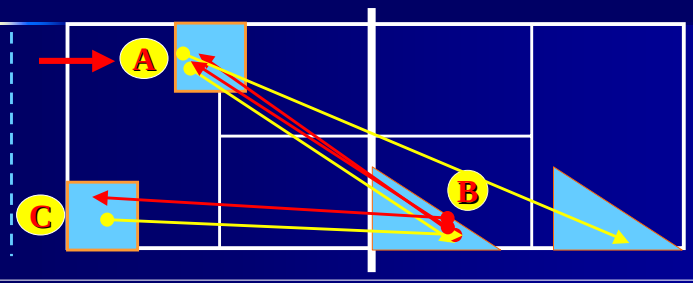
➢ Drill 13



1. **Both play cross court:**
   - **Player A play only forehand from the backhand side;**
   - **Player A move forward and play only two time forehand cross court;**
   - **Player A must must hit a forehand winner deep down the line;**

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

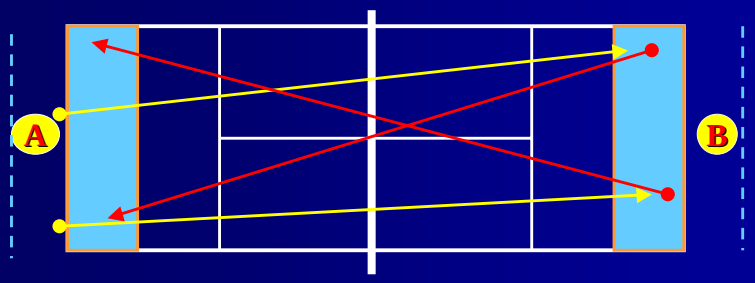
➢ Drill 14 and drills ab drill 7 with three players



- **Player A play move forward and forehand from the backhand side;**
- **Player B play down the line and cross court from the backhand side;**
- **Player A move forward and play only two time forehand cross court;**
- **Player A must must hit a forehand winner deep cross court;**

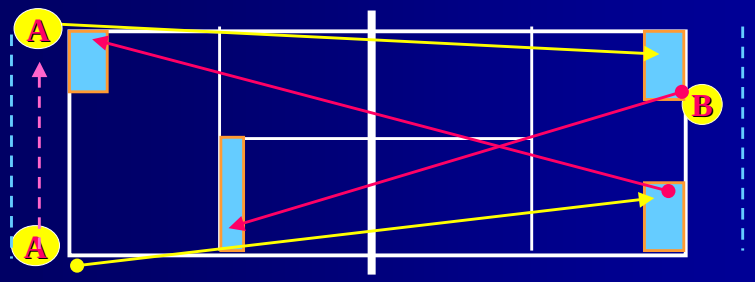
Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

➢ Drill 1 (It can be counted with different systems)



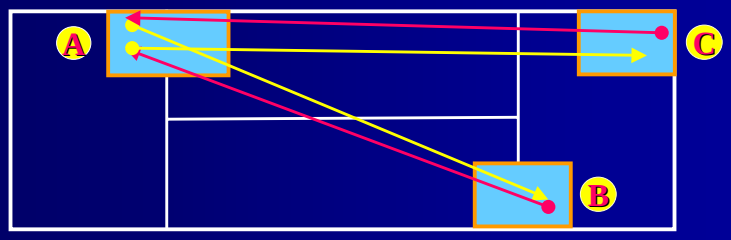
Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

➢ Drill 2 (Deep service and deep baseline strokes)



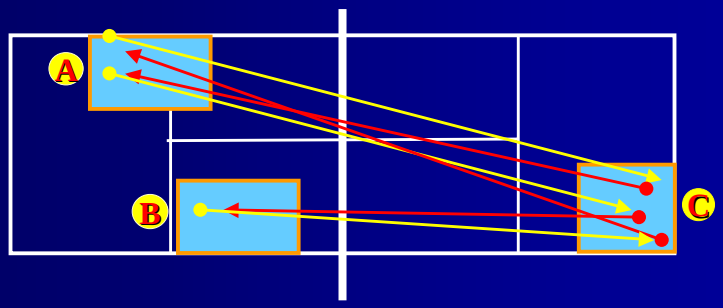
Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **Drill 3** (A, B, C plays both on both sites or everything only with the forehand or with the backhand)



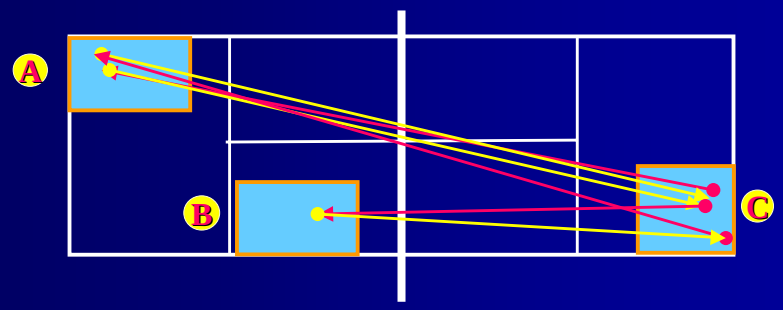
Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **Drill 4** (A, B, C plays both on both sites or everything only with the forehand or with the backhand)



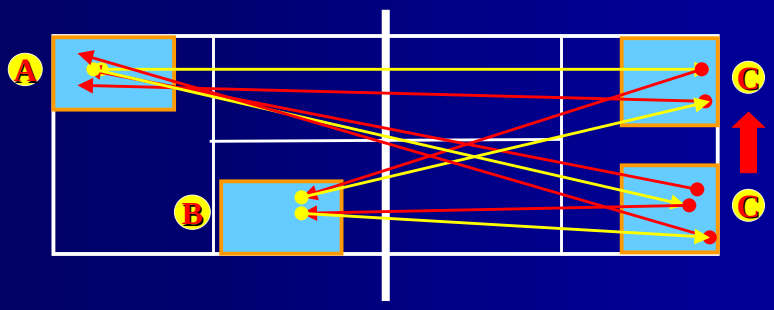
Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

Drill 5 (A, B, C plays both on both sites or everything only with the forehand or with the backhand)



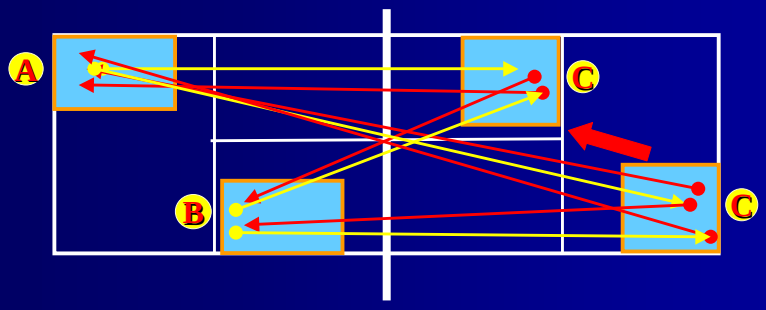
Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

Drill 5 (A, B, C plays both on both sites or everything only with the forehand or with the backhand)



Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

- **Drill 6** (A, B, C plays both on both sites or everything only with the forehand or with the backhand)



Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de

Richard Schönborn - 2006 All rights reserved;
E-Mail: richard.schoenborn@t-online.de.
www:richardschoenborn.homepage.t-online.de