

Speed and agility training for tennis

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1 Aim of the presentation

- to focus on on-court drills for running speed (no resistance, reaction or anticipation training)
- to present a lot of training examples and to give an idea for structuring these examples according to their training targets
- to create sensitivity for the complexity of running speed
- to inform about how these training examples can be included into training practice

2 Characterization of running speed demands in tennis

Fast tennis-specific movements are limited by:

1. General agility

Example: stroke preparation over short distances under time pressure and precision demands

2. Frequency speed (impulse or stride frequency in a cyclical movement)

Example: acceleration over longer distances (8-10 m from baseline to net) without direction change and low power demands

3. Start, stop and displacement speed (short ground contacts, reactive force and power)

Example: maximum single movements (vertical or sideward jumps, direction change at net or baseline corner, max. accelerations over short distances)

4. Action and reaction speed (not discussed)

3 General training guidelines

- Training of running speed in tennis has to include different contents with different targets and different specificity and thus different adaptation (brain signal efficiency, neuromuscular combination, tendomuscular performance).
- Coaches have to be always aware on which system different training contents may have an influence and they have to choose them carefully.
- Training amount always has to be low; especially in the first weeks muscle tissue destruction will occur in young and not specifically trained athletes.
- Training quality always has to be very high; coaches have to survey the quality in the first training units.
- Recovery periods have to be long enough (6 s maximum energetic flow = 45-60 s recovery)

4 Training contents and targets for tennis players

training contents	tennis specificity	training targets
<p>A) ABC of running</p> <p><u>Examples:</u></p> <ul style="list-style-type: none"> - Ankling (standing, moving) - Running balance (standing, moving) - March walk - Straight leg shuffle 	<p>low basic for all speed demands</p>	<ul style="list-style-type: none"> - body stability - running technique - hip and ankle strength
<p>B) General Agility</p> <p><u>Examples:</u></p> <ul style="list-style-type: none"> - Ladder drill (2:1, 3:1, In-Out Shuffle, Zig-Zag) - Tapping (point, line, cross) - acyclical point sprint - poison pills 	<p>semi</p>	<ul style="list-style-type: none"> - Intermusc. coordination
<p>C) Elementary Speed</p> <p><u>Examples:</u></p> <ul style="list-style-type: none"> - acceleration ladder drill (1:1) - Tapping to sprint - 1leg 2leg boundings - low hurdle jumps - rubber tube assisted jumps (sideward/forward) 	<p>semi</p>	<ul style="list-style-type: none"> - Stride frequency - Ground contacts
<p>D) Start, Stop and displacement speed</p> <p><u>Examples:</u></p> <ul style="list-style-type: none"> - resisted jumps and drop jumps - resisted sideward jumps - resisted hexagon drill - wall drills - partner tubing (towel) resisted speed drills - weight (parachute, weighted vest) resisted speed drills - explosive upstairs/uphill drilld 	<p>semi</p>	<ul style="list-style-type: none"> - Reactive force - Power - Reflex activation - Muscle stiffness - Preactivation
<p>E) Tennis specific speed</p> <p><u>Examples:</u></p> <ul style="list-style-type: none"> - cone drills - T-Drill - counter movement passing-shot - counter movement volleys 	<p>high</p>	<p>Tennis specific coordination Transfer of adaptations Cognitive performance</p>

5. Transfer into practice

	Children	Juniors	Young Pros	
A	x	x	x	
B	x	x	x	
C	x	x	x	
D		x	x	important
E	x	x	x	most important
Strength		x	x	very important

Example A (on-court)

90' Children Tennis Training Unit (15' speed training integrated)

	training quality
- 5 min block integrated into warm up (A,B,C)	+
- successively integrated during rest periods (B,C,D)	-
- 5-10 min block at the end of training (D,E)	+

Example B (off-court)

4 week mesocycle with juniors or young pros (3x90' physical TU/week)

Benefit: 20-60 cm/10 m

Contents	Week 1	Week 2	Week 3	Week 4
A	30'	20'	15'	10'
B Ladder drills Tapping acyclical sprints	20' 4x5x4s (15 s rest) 5x4s (20 s rest) 5x4s (30 s rest)	20' 4x5x4s (15 s rest) 5x4s (20 s rest) 5x5 (30 s rest)	-	5' 2x5x4s (60/20 s rest)
C assisted drop jumps 2leg hurdle jumps ass. sideward jumps	10' 8 (10 s rest) 2x6 (30 s rest) 2x6 (30 s rest)	10' 3x8 (30/10 s rest) 4x6 (30 s rest)	-	5' 4x6 (30 s rest)
D resisted jumps split-squat jumps resisted sideward partner tubing weight resisted drills explosive upstair	5'(introduction) 2x3 2x3 2x3	20' 6x4 (90 s rest) 3x8 (90 s rest) 2x5 s (60 s rest) 2x5 s (60 s rest) 2x5 s (60 s rest)	40' 6x4 (90 s rest) 4x4 (90 s rest) 3x8 (90 s rest) 2x4x5 s (120/60 s rest)	20' 6x4 (90 s rest) 4x4 (90 s rest) 4x5 s (60 s rest)
E cone drills ZigZag runs CM passing-shot CM Volleys	20' 3x5 s (60 s rest) 3x5 s (60 s rest) 8 (30 s rest) 8 (15 s rest)	15' 2x8 (90/30 s rest) 2x8 (60/15 s rest)	30' 3x5 s (60 s rest) 3x5 s (60 s rest) 2x8 (90/30 s rest) 2x8 (60/15 s rest)-	45' 5x5 s (60 s rest) 5x5 s (60 s rest) 4x8 (90/30 s rest) 4x8 (60/15 s rest)

Literatur:

Brown LE, Ferrigno VA, Santana JC: Training for speed, agility, and quickness. Human Kinetics, Champaign 2000.