



Aspects of Training Quality in Elite Children's Tennis

Alexander Ferrauti

Faculty of Sport Science, Ruhr University Bochum, Germany

1 INTRODUCTION

This practical presentation will focus on several aspects of training quality in children's tennis. I will include advices for off-court warm-up (e.g. pros and cons of stretching), on-court warm-up ("short term stroke onto genesis"), technical training (recommendations for stroke quantity for technical stabilisation) and tactical training (including situational training with cognitive demands). The main part of the presentation will cover recommendations for training of speed and agility (examples for training contents and their specific neurophysiological targets).

2 GENERAL GUIDELINES FOR SPEED AND AGILITY TRAINING

- 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, muscular performance).
- Coaches always have to be aware of which system different training contents may have an influence on and therefore must choose them carefully.
- Training volume must always be low; especially in the first weeks when muscle tissue breakdown can 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 sec maximum energetic flow = 45-60 sec recovery)

3 TRAINING CONTENTS AND TARGETS FOR SPEED AND AGILITY TRAINING

Training contents	Tennis specificity	Training targets
A) ABC of running <u>Examples:</u> <ul style="list-style-type: none"> - ankling (standing, moving) - running balance (standing, moving) - march walk - straight leg shuffle - bounding 	low	Basic Motor skills <ul style="list-style-type: none"> - running technique - hip and ankle strength
B) Agility drills <u>Examples:</u> <ul style="list-style-type: none"> - ladder drill (1:1, 2:1, 3:1,...Carioca, In-Out Shuffle, Zig-Zag) - tapping (point, line, cross) - tapping to sprint - acyclical point sprint 	semi	Brain signal frequency <ul style="list-style-type: none"> - stride frequency - intermuscular coordination
C) Assisted plyometrics <u>Examples:</u> <ul style="list-style-type: none"> - assisted drop jumps, 1 leg, 2 leg bounding - headings - 2 leg low hurdle jumps - rubber tube assisted jumps (sideward/forward) 	semi	Brain signal duration <ul style="list-style-type: none"> - short motoric patterns - quickness
D) Resisted plyometrics <u>Examples:</u> <ul style="list-style-type: none"> - resisted jumps and drop jumps - split-squat jumps - 1 leg low hurdle jumps, 2 leg high hurdle jumps - 1 leg bounds - resisted sideward jumps - hexagon drill 	semi	Reactive strength <ul style="list-style-type: none"> - stretch/shortening cycle - myostatic reflex activation - muscle stiffness - pre-activation
E) Resisted acceleration drills <u>Examples:</u> <ul style="list-style-type: none"> - wall drill - resisted stationary skips (rubber tubing) - partner tubing (towel) resisted speed drills - weight (parachute, weighted vest) resisted speed drills - explosive upstairs/uphill drill - contrast acceleration drills 	semi	Muscular power <ul style="list-style-type: none"> - recruitment of fibres - explosive force

F) Zig-Zag drills	high	Reactive strength Muscular power Brain signal efficiency Basic motor skills
Examples:	- cone drills - 20-yard square - baseline sprint - T-Drill	

G) Tennis drills	high	Cognitive performance Specific motor skills Transfer of A-F
Examples:	- counter movement passing-shot - counter movement volleys	

4 TRANSFER INTO A 4 WEEK MESOCYCLE WITH JUNIORS (3 X 90 MIN/WEEK)

Contents	Week 1	Week 2	Week 3	Week 4
A	20 min	15 min	10 min	10 min
B	10 min	10 min		5 min
Ladder drills	3x5x4s (15 s rest)	5x5x4s (15 s rest)	-	2x5x4s (60/20 s rest)
Tapping	5x4s (20 s rest)	5x4s (20 s rest)		
Acyclical point sprint	5x4s (30 s rest)			
C	10 min	10 min		5 min
Assisted drop jumps	8 (10 s rest)	3x8 (30/10 s rest)	-	4x6 (30 s rest)
2leg hurdle jumps	2x6 (30 s rest)	4x6 (30 s rest)		
Ass. sideward jumps	2x6 (30 s rest)			
D	5 min (introduction)	15 min	20 min	10 min
Resisted jumps	2x3	6x4 (90 s rest)	6x4 (90 s rest)	6x4 (90 s rest)
Split-squat jumps	2x3		4x4 (90 s rest)	4x4 (90 s rest)
Resisted sideward	2x3	3x8 (90 s rest)	3x8 (90 s rest)	
E		10 min introduction)	20 min	10 min
Partner tubing	-	2x5 s (60 s rest)	2x4x5 s	4x5 s
Weight resisted drills		2x5 s (60 s rest)	(120/60 s rest)	(60 s rest)
Explosive upstairs		2x5 s (60 s rest)		
F	10 min		10 min	15 min
Cone drills	3x5 s (60 s rest)	-	3x5 s (60 s rest)	5x5 s (60 s rest)
ZigZag runs	3x5 s (60 s rest)		3x5 s (60 s rest)	5x5 s (60 s rest)
G	10 min	15 min		20 min
CM passing-shot	8 (30 s rest)	2x8 (90/30 s rest)	-	4x8 (90/30 s rest)
CM Volleys	8 (15 s rest)	2x8 (60/15 s rest)		4x8 (60/15 s rest)

REFERENCES

Brown, L. E., Ferrigno, V. A., Santana, J.C. (2000). *Training for speed, agility, and quickness*. Human Kinetics, Champaign.

Demonstration

Recommendations

A	General warm-up	
1.	Stroke imitation, coordinative runs, tennis-specific movement patterns	Start the training unit with coordinative runs and a tennis-specific muscle warm-up
2.	Dynamic stretching	Shorten the stretching part; 4 dynamic movements are enough!
3.	Ankle, leg and whole body stabilisation	Include running ABC, whole body tension and balance exercises into warm up
4.	stride frequency, agility, reactiv strength, reactiv stiffness jumps	Allways reactivation of fast motoric patterns before tennis training and match play
B	Tennis-specific warm-up	
5.	Ground stroke preparation	Use the short game for "stroke Re-Ontogenesis", control of wrist, hitting point, grips
6.	Volley preparation	Use the short game for a focused Volley stabilisation without any time pressure
7.	Agility drills	Include footwork and agility drills in each unit (most important condition factor in children!)
8.	Small games	Use sensful and match related small games
C	Technical and tactical training	
9.	Forehand winner percentage drill Preactivation with basketball Topspin-Volley	Improve forhand velocity and precision - include a specific conditioning - include cognitive demands - 4-8 strokes (quality vs. quantity)
10.	Forehand winner game	Combine technical and tactical training immediately with specific games
11.	Backhand variability	Improve backhand stability and variability - include cognitive demands
12.	Backhand stability cross game	Combine technical and tactical training with specific games (include more overheads)
13.	Service Power	Improve stroke velocity of 1st serve (2 km/h per month) - throwing balls, strength (homework) - throw ball in front/basics for serve&volley
14.	Net game Sideward jumps and badminton overhead clear	Teach footwork techniques for the longterm development of approach tennis
D	Conditioning	
15.	Running speed and agility	Footwork drills in each training unit as a partly replacement of endurance training ! - create maximum time pressure (e.g. volley, drop-shot or 2 nd bounce) - include change of direction



- max 4-8 strokes (short distance)
- max 2-4 strokes (long distance)

E Cool-down

16. Baseline rhythm Relax, have fun and always feel good (e.g. music) when you leave the court
17. Stabilisation/relaxation Include whole body stabilisation (additionally as homework)

F General Points

1. The winning tactics differ completely between a 10 yrs (no 1st serve, hitting point deep behind baseline, high ball curve, no net attack, 80-90 % forhands) and a 20 yrs old player. In consequence (1.) we have a lot of drop outs or at least problems in transfer from junior to adult tournaments, (2.) the promotion of talents according to early success oftenly forgets the long term potential of development, (3.) solid and powerful baseline game is the typical and nearly unique male championship tactic, (4.) only a few - but Top Nr 1 players - show variable baseline and net game.

Recommendation: early preparation of technical, tactical and conditional preconditions with an early but sensible adaptation of tournament match play tactics. Aim to find the midway between enough early success and a longterm game development.

2. The most important training contents in the development from children to junior tennis in my opinion are (1.) a powerful and precise forehand and 1st serve, (2.) a solid and variable backhand, (3.) footwork, balance and running speed and (4.) basic motoric patterns and confidence for the net game.

Recommendation: be always aware that the time from 12 to 14 years is very short and that even each single training unit is an important step of the individual development. Work with a clear plan and according to precisely defined training targets.

3. From a pedagogical and psychological point of view, coaches have to start early to transfer a part of the responsibility for training success to the children. Only self responsible children with an own definition of targets will be successful in the future.

Recommendation: give guidelines for homework training contents, training and match statistic documentation aids (e.g. excel files).

Address for correspondence:
Prof. Dr. Alexander Ferrauti
Ruhr University Bochum
Faculty of Sport Science
Department of Training Science
Stiepeler Straße 129 UHW
44780 Bochum
alexander.ferrauti@rub.de
0049-234-3222451