

## THE IMPORTANCE OF COMBINING MUSCULAR CONTRACTIONS DUTY FOR STRENGTH TRAINING, IN THE GAME OF TENNIS, FOR 11-12 YEAR-OLDS

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### **Abstracts:**

*The issue of optimizing the motor skills has always concerned experts in the sport training domain, mainly because it ensures the biological and functional under layer of the physical effort demanded by competition, Macri A.C., 2005, p.7.*

*The purpose of this research lies in the presentation and argumentation of the means orientated towards the tennis player's physical strength training in order to achieve an optimal capitalization of his/hers performance capacity reflected in obtaining greater results in competitions and tournaments.*

*In order to join the purpose and demands we submitted we will use the following research methods: the analysis and generalization of data in specialized literature; the pedagogical observation method; the inquiry method – through questioning; the measuring and motor testing method, the pedagogical experiment; the graphic and tabular method.*

*For elaborating the experimental programme, the main objective was represented by the choosing of the most efficient means belonging to the poly-metric contractions duty so as to optimize the strength.*

*We took into consideration particularities of age, sex, and the athlete's level of training, but also the type of strain and the game's particularities, and the physical effort's volume, intensity and complexity.*

**Key words:** optimization, plyometrics, programme.

**Introduction:**

During the full cycle of the athletic life of a tennis player, the age of 11-12, preparation level — advanced, being the stage of the childhood's greatest performance, which follows the first organized training stage and prepares the consolidation and complete perfecting, where a high physical support is required.

The tennis player's training is scheduled in accordance with the competition programme, which includes tournaments that are organized all year long, followed by 3-4 weeks when the training is continued. The physical preparation for the tennis player finds its place usually in the winter time, less in the competition period, and with lower balance all year long.

**Methods:**

In order to join the purpose and demands we submitted we will use the following research methods: the analysis and generalization of data in specialized literature; the pedagogical observation method; the inquiry method — through questioning; the measuring and motor testing method, the pedagogical experiment; the graphic and tabular method.

**Results:**

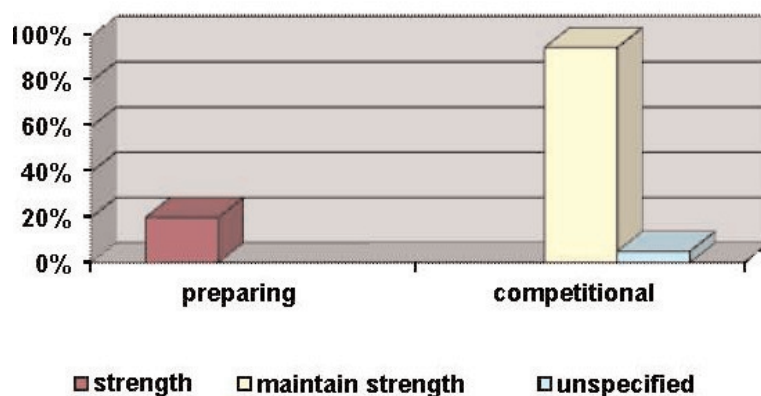
The question-based inquiry offered us large volume of information regarding the education/development manner of the motor force skills, at the age of 11-12, for advanced child tennis players, and also an opinion on the general working method with tennis players from this age range. The age of the inquired trainers (10 trainers) ranges from 24 to 56, having a length of service between 2 and 28 years.

Conclusions, at the age of 11-12, the weekly specific strength training is used — 70% of the trainers (7) we asked, and 30% work two trainings to develop strength in its diverse ways of manifestation.

All questioned trainers work once or twice per week speed-strength trainings, but not specifying how they work to educate the strength.

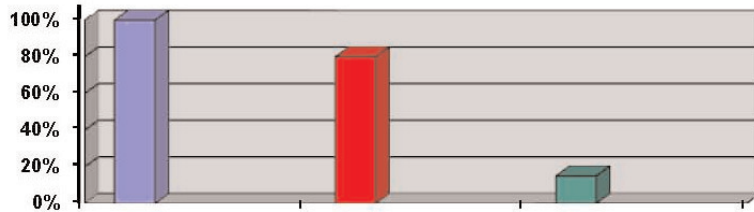
During the preparation period, 80% of the persons questioned work on developing strength in general, and 20% concentrate also on the build-up of muscular strength. When in pre-competitional and competition period, in 90% of the cases the purpose is obtaining maximum strength and maintaining it by doing 2, 3 maximum, trainings per week, and 10% work with reduced loads in comparison to the preparing period and 2 trainings per week without naming the methodic orientation of the period.

The use of the method of combining the duties of muscular contractions is applied by 60% of the ones asked, used between volumes and low intensity, and 40% use it not so frequent or not at all.



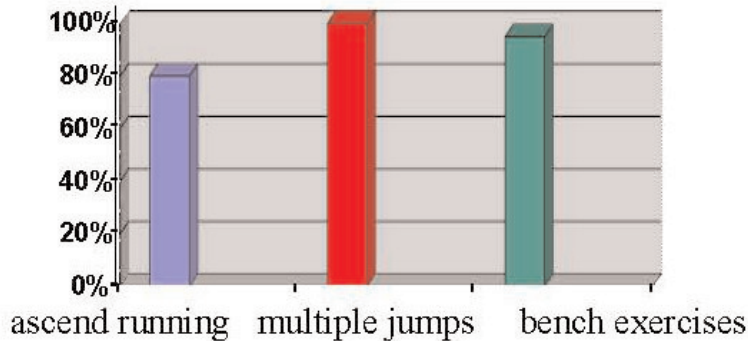
**Figure 1**

When considering the stability of the exercises for developing strength: the inquired trainers (100%) use calisthenics (jumping squat, different squats, steps, semi-squats, toe rising) for the speed-strength training, jumps and different combinations of those mentioned (with or without approach) 100% of those asked, 80% for exercises using the medicine ball, 15% for plyometric exercises, but with lowered intensities according to the age levels.



**Figure 2**  
**Means used in strength training**

When answering questions regarding the utility of dynamic strength exercises — using ones body weight, we gathered the following data: ascend running (80%), multiple jumps (100%): long jumps without approach, triple jump, penta-jump, deca-jump, frog jumping, step jumps; bench exercises (95%).



**Figure 3**  
**Dynamic strength means used by the questioned trainers**

Plyometric exercises are used at about 15% in the strength training of skilled children tennis players.

*Experimental programme proposal*

**The main objective is the choice of the most efficient means of plyometric contraction duty to optimize the strength.**

We took into consideration particularities regarding age, sex, and the level of training each athlete had, but also the kind of load

and the game's characteristics, and also characteristics of volume, intensity and effort complexity.

*The strength training programme  
is based on the following arguments:*

● The characteristic of the tennis game, considering that in this sport the effort is backed up by all muscular divisions that make effort combined and successive towards field movement and to perform technical procedures. The performances are explosives, in a coordination duty with a variable effect on duration and intensity.

● Age particularities, somatic development and psycho-motor of experimental subjects.

● The content of the tactical stages of the single game: the fix game stage and its component moments: service and return of service, the alternative game stage and its phases: ball's directions, the play-off and its components. Winning the net point and at the baseline, the passing game stage and its components: the offensive-defensive circuit.

● The game planning can differ from player to player, but in strong connection with every player's psycho-motor particularities and with his/hers techno-tactical knowledge. The modern game is offensive, in force, characterized by aggression, due to the fast surfaces. The strength training must answer to these demands. Strength exercises will be performed under a dynamic rhythm, at high range: weight loosing exercises (squats, running pushups with small weights: sand bags, vests — not heavier than 2.5 — 3 kg., ascend running, multiple jumps).

**Table I**

**The objectives of applying the optimizing manifestation forms of strength for**

**An optimization programme of the overall strength, especially in the upper body muscle divisions.**

Verve factor	General character	The components of the tactical stages in tennis			
Physical	The development of great body functions; Harmonious physical development; The development of basic motor aptitudes and general drive ability.	The fix game stage and component moments: service and return	The alternative game stage and component moments: ball directions	The crucial game stage and component moments: winning the net point and the baseline	The passing game stage and component moments: the offensive-defensive circuit

- Knee to chest jumps;
- Pushups;
- Torso lifts;
- Jumping squats;
- Torso extensions;
- Abdomen training;

**Routine:**

Work time: 3x30'' with a 30 second break, break between series 3 minutes, active break, consisting of mobility exercises and active and passive stretching.

The progression element is represented by the gradual boost of the execution time by 5 seconds.

**Table 2**  
**The optimization routine of the means of strength manifestations in tennis with the help of plyometric muscular contractions duty**

WORKOUT OBJECTIVES			
Vertical jump optimization Continuous sporadic steps on the same foot, 4x20cm, - Spotted step takeoff and touching the suspended object, by running, 10 reps, - Beach jumps on every foot 3x10 reps - Alternate foot jump 3x20	Optimization of arms explosive strength 4x10 vertical throws with the med ball (1-2 kg) 4x10 chest throws (2kg) 3x10 lateral throws	Optimizing the explosive strength on resistance duty Long jumps without approach Standing long jumps, by sprint 4 jumps together with sprints on 10-15 m Or, Sand shear jumps 3x20	The optimization of strength on skillfulness and speed duty regarding upper and lower limbs Triple jump with and without approach (or standing triple jumps, jumping over an obstacle 3x) Step jumps on two legs, step by step, or every other step 3x20 steps, Jumps on, over different height cubes 6x cubes, Deep jumps over an obstacle 10x15 reps,
- Squatted support, advanced extension jump in the lumbar area; Squatted jump, high vertical jump - High jump squat 3x10.	Back over head throw of the med ball 2kg, starting in a bent forward position, 10x20x Stepping wheel barrow with extended hands 3x10,	Full-landing from a high area, followed by jumps over a fence of 50 cm high; 10x15 reps Long "frog" jumps 3x6; 4x1 min diversified cord jumps 6x5 hurdles (50 cm) on 2 feet	

**Conclusions:**

1. When considering the prospects of the physical training of tennis players we have to take into consideration the game's characteristic;
2. In order to maximize the athletes 'training, a thorough knowledge of the factors that make up professionals in tennis is required for the trainers.
3. For strength training there should be a balance between strength evolution and the techno-tactical training, but also with the other motor skills. The author recommendations refer to always work in parallel strength, speed resistance, grace and technique.
4. Workout routines regarding strength are established following the specialists' recommendations in tennis, and when followed, strength exercises will always be followed by others to develop grace and articular drive. Moreover, a second demand for efficiency in strength training, is to ensure a dynamic rhythm, with high range of the used routines.

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