# TAKE - OFF DEVELOPMENT AT HANDBALL PLAYERS, 12 -13 YEARS

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**Abstract**

The use of jumps inside the training of handball players represents a well recognised method of developing the physical capacity, especially at this age when working with weights is not quite recommended.

The purpose of this paper is to determin the influence of jump exercises on developing the take-off at a group of handball beginners formed of boys aged 12-13 years, through the simple plyometrical method.

**Introduction**

The performance sport represents the model into which all efforts of the interested factors from the activity of training the children and junior teams are invested. The actual preoccupations of the sporting movement with direct connection to the children's and juniors' practice shows concern for organising and efficient preparation guiding at these levels of age.

On a methodic plan, the corelation between the content of the sporting instruction and the somatic, functional and pshycal particularities of the children is permanently sought, this practice being applied to the senior sportsmen on a moderate basis.

Orienting the instruction, as well as its content must be done according to the highest characteristics of the actual and future development of the world performance sport and with the close connection to the young people's capacity to progress on a physical, technical, tactical, psychological plan and in accordance with these possibilities the job specializing is begining to become a little bit more clear.

Unfolding a modern training process means that one has to start since early childhood to use the elements of physical, technical, tactical elements, proven to be the most efficient ones, and not to begin with exercises and much more theoretical notions. Instructing children may begin by new models created beforehand by the coach, which, at some moment, are but hypothesis, but hypothesis that may later on become of maximum efficiency.

Inside the game of handball, the effort is characterized by a heavy use of the neuro-psychical sphere, as well as of the metabolic one and of the neuro-muscular system. The correct estimation of the effort suported by players during a match represents a basic condition for orienting the training process. The effort solicited and each player's ability to adapt determin the quantity and variety of the preparation means and methods.

Achieving a close connection between the content and methodics of the training and the requests of the game, between the means of the general physical preparation, the specific physical training, the technical and tactical training according to the contest requests.

Great attention must be paid to the operational models which make possible the training under game conditions, the opposition relation by use of the numeric balance, numeric inferiority or superiority. The physical training encloses a whole system of measures which ensure a high functional ability of the organism, by the increased level of development of the basic and specific motric qualities.

Both for the beginners as for the performance sportsmen, the physical training constitutes the starting point and creates the necessary basis for approaching the other training components.

The take-off is a form of force manifestation and it is found in the special field literature under the name of explosive force, speed-force, and force under high speed regyme.

The process of improving the take-off is a difficult enough process, as it asks both for the process of choosing and quantifying the developing methods as for the operation of combining them in such a manner as to produce positive effects.

***The plyometric method***

The plyometric practice is known under more than one name: Zanon, 1975, names it „*the elasticity training",* Schmidtbleicher, 1978, calls it „*excentri trainingc*", Schroder, 1975, gives it the name of „*reactive training"*.

Thanks to its efficiency, the plyometrics rapidly became well known by coaches and sportsmen and used to develop the explosive kind of force. As a training method, plyometrics is based on using the exercises which help a muscle reach a maximum of force in as short a period of time as possible.

Gilles Cometti divides the methods accomplishing the plyometric reaction into three groups:

- The simple plyometrical method;
- The tall plyometrical method;
- The weightening plyometrical method.

The simple plyometrical method uses jumps, foot or feet detachments, coard jumping, jumping over small obstacles (boxes, not very tall fences), leapead or juped steps, or, more briefly, the exercises from the jumps school, without weights or with easy weights.

*Bosco,* 1985, names the plyometric training the „hyper-gravity training". He underlines the idea that the weights (vests) must not go beyond 13% of the weight of the body and sustains the idea that they have a positive effect on increasing the execution speed and the force-speed. The raise of the speed or of the force-speed in this case is the result of growing the number of of moric unities subjected to conditions of hyper-gravity.

*Zațiorski* claims that the use of the plyometrical contraction in the athletic training produces an increase of the isometrical maximal force of 1,5 times.

*Verhoşanski* considers the plyometric training to be a „shock method" and does a few underlinings, especially important to the practical activity, and with direct reference to the approaching means.

The plyometrical training of reduced intensity presupposes the use of the simple plyomerical method which is used during well spcified periods of the year, usually in the initial preparing times, for the increase of the plyometrical aptitude and also during the end precompetition perods, in order to maintain the plyometrical aptitude.

The plyometrical training of reduced intensity uses:

- Exercises based on the long or high take-off on one or both legs;
- Exercises with jumps over, from and on small obstacles, with both or only one leg;

This type of execution contributes to improving elasticity at the level of the ankle joint, but also to bettering the movement coordination.

**The research hypothesis**

Selecting and quantifying the instruction means represents a primordial necessity inside the actual training process. Standardising and rationalising the instruction means offers the trainer the possibility to judicially and efficiently use the time aforded to the instruction, by exercise experimenting.

Taking into consideration the purpose of the paper, -ways to develop the elan of the inferior limbs, by using the jumps method for the beginner handball players-, we have taken as a base hypothesis the following one:

*We consider that by the use of the jumping exercises in the handball practice of beginer children players, the development indices will be significantly improved, this having a remarcable effect on the motric game behaviour.*

**The subjects**

24 male subjects practicing handball and being part of the beginner group participated in realising this experiment. The 24 subjects were divided into two distinct groups: the experiment and the control group inside the Targoviste Sporting Club.

**The research protocol**

The research unfolded over 6 months, T.I. was realised in the month of September of the year 2008. The trainings took place both outside and inside the gymnasium, both groups profiting from the same training conditions, the difference consisting only in the fundamental part of the training for the experimental group, for which the exercises for developing the elan were introduced. The control group had traditional training conditions.

Both the initial and the final tests (T.I. and T.F.) were realised inside the gymnasium, at a temperature situated between 19-24 degrees in the morning, on a Monday, at 8.30. The test was taken on the first day of the week, as the children had 2 days of no specific effort.

The subjects' sporting equipment during the tests was identical. There were no health problems or accidents (muscular or of any other nature) to be reported to have appeared before the test and that might have badly affected the subject's performance.

The action systems were conceived to develop the take-off, the accent being placed on the execution speed, force (without weightening), elan and technique. As a level of application, the force programs

influenced at a greater extend the development of the superior limbs and trunk force, compared to the development of the inferior limbs. The elan completed the force motrical quality, in order to develop the inferior limbs. Inside the speed development we sought to develop the amplitude, the frequency of movements, of the speed reaction, and especially of the execution speed.

The difference between the action systems of the two groups consisted of applying exercises for developing the take-off in the experimental group. For the rest of aspects, the acting systems had as objective the general physical development and that of the motrical qualities, identical for both groups. With regard to the number of training sesions, three trainings were organised each week and in a similar manner for both groups; two trainings of the experimental group contained the independent variant.

**Results**

| | Test | P | 3 succesive jumps cm. | Vertical detachment on both legs cm. | Vertical detachment on the heat leg cm. | Height cm. | Weight Kg. |
|---|---|---|---|---|---|---|---|
| **The experimental group** | **Initial** | M ± | 541,667±21,197 | 33,75±2,179 | 42,25±2,094 | 160,167±11,51 | 50,33±10,272 |
| | | Ds | | | | | |
| | | Cv | 3,913% | 6,456% | 4,956% | 7,013% | 20,408% |
| | **Final** | M ± | 573,75±18,563 | 40,917±2,61 | 48,833±2,368 | 161,333±11,19 | 50,83 ± 10,241 |
| | | Ds | | | | | |
| | | Cv | 3,235% | 6,379% | 4,849% | 7,014% | 20,146% |
| **The control group** | **Initial** | M ± | 539,583±20,038 | 34,083±1,881 | 42,75±2,301 | 160,417±11,14 | 50,33±10, 272 |
| | | Ds | | | | | |
| | | Cv | 3,714% | 5,519% | 5,382% | 6,949% | 20,408% |
| | **Final** | M ± | 540±19,268 | 34,833±1,749 | 43,333±2,229 | 161,5±10,85 | 50,75±9,965 |
| | | Ds | | | | | |
| | | Cv | 3,568% | 5,021% | 5,144% | 6,718% | 19,635% |

**Discussions**

For the experimental group we may notice that the sujects' results in the 3 successive jumps are significantly improved (541,667±21,197 inițially, and 573,75±18,563 after 6 months; at a significance level of $p < 0,001$), vertical detachment on both legs (33,75±2,179 inițially, and 40,917±2,61 finally; at a significance level of $p < 0,001$), vertical detachment on one the heat leg (42,25±2,094 inițially, and finally 48,833±2,368; at a significance level of $p < 0,001$). These results are a result of the superiority of the means used in the experimental group.

The results of the control group register insignificant increases: for the 3 successive jumps (539,583±20,038 inițially, and 540±19,268 finally, at a significance level $p > 0,05$), vertical detachment on both legs (34,083±1,881 inițially, and 34,833±1,749 finally; at a significance level $p > 0,05$) and vertical detachment on the heat leg (42,75±2,301 inițially, and 43,333±2,229 finally; at a significane level $p > 0,05$)

The difference between the subjects from the two groups and with direct regard to the final testing shows a significant evolution favouring the experimental group: in the two successive jumps (the experiment group 573,75±18,563; the control group 540±19,268; at a significance level of $p < 0,001$), vertical detachment on both feet (the experiment group 40,917±2,61; the control group 34,833±1,749; at a significance level of $p < 0,001$), vertical detachment on the heat foot (the experiment group 48,833±2,368; the control group 43,333±2,229, at a significance group $p < 0,001$). These results confirm the work hypothesis of the positive effects of the jump exercises introduced in the training programmes of children aged between 12 and 13.

**Conclusions and suggestions**

The use of the simple plyometrical method and of the jumps exercises at beginner handball players has benefically influenced the performance of those subjects from the experiment group.

We consider that introducing jumps exercises in the handball players' training is benefic for the increase in the take-off performance of the inferior limbs and on this basis we submit to the idea of putting together models of specialised physical preparation for beginner handball players.