Evaluation of the Dominant Sensorial Perception through Sports Performance Training

Veronica Mîndrescu[a], Veronica Popescu[b]

[a] *Transilvania University of Braşov, Faculty of Physical Education and Mountain Sports, Romania*
[b] *Alexandru Ioan Cuza University of Iaşi, Faculty of Physical Education and Sport, Romania*

Abstract

Performance sport is a specific activity which limits the physical and mental possibilities of the individual, a social experiment in which an impressive number of sciences and disciplines with scientific characteristics test their forces. The intervention of the psychological preparing and assistance on athletes has as starting point the need to increase the mental capacities and to adapt them to the limit requirements of the specific activities, and as an ending point to achieve the mental "skills" which will satisfy those needs under reliable conditions of the psychobehavioral sistem.

The aim of the research constitutes, on the one hand, the study, analysis and acknowledgement of particular psychological personalities of the athletes and their manner of evolution in terms of their dominant sensorial perception; on the other hand, to improve the process of sports training in light to increase the general level of sports performances, in the game of handball.

The subjects taking part in the research are 14 female handball players with ages ranging from 14 to 16 years old, members of the Handball Sports Club Association Veraflor Braşov.

The methods of testing include: the sensorial perception test, the questionnaire contains 15 items, each having 4 possible answers. (AVKD)

Auto-observation – Each subject has watched selected video sequences from their training, after which they were invited to describe aloud the accuracy of their activities and on how they communicate with their teammates.

Conversation – it targeted the same formative effect through feedback, observing the way in which the female handball players are selecting perceptive data, how they systematize it, how they verbalize it and how they introduce them into their behavior.

This research highlights the importance of mental processes in performance sports activities. The result of the research contribute to the confirmation of the hypothesis that the application of a specific methodology in the process of preparation helps the development of the secondary channels of perception in training and implicitly at the increasing of general level of the individual and group sports performances.

Keywords: evaluation, sensorial perception, individual training, sports performances

Introduction

Bota (1984: 79) considers that "the limits of human possibilities in the practicing of handball are not determined only by their optimal form, on their physical development, of the functional perfection of the organs and tissue, but also by the quality of virtues in human beings, by the human's psychic. The psychical component represents, in the end, the motive of the entire activity, because it activates and regulates the superior functions of the organism, it creates a fertile ground, of superior manifestation of the traction and mastery of technical-tactics."

The correct attribution of the technical elements of the game represents a fundamental task for the coach in the first stage of the training. The technical procedures are motor skills specially designed for the execution with the maximum efficiency of the specific actions for the game (Dragnea et al, 2006). Through the manifestation of individual particularities of morph-functional and mental type, these technical procedures acquire special tones at the high class athletes, with effects in increasing the respective executing efficiency. These executions are analyzed and, depending on their practical value, are taken by other athletes, becoming eventually technical procedures.

In his activities, man needs to receive, to store, to process and to transform the information, and this is possible with the help of sensorial-perceptive mechanisms, retrieval and rational-logic mechanisms.

In order to understand a person's behaviour, the reactions in different context, it is necessary to know the primary mechanisms of information processing: sensations, perceptions, representations; respectively, secondary mechanisms of information processing: imagination, thinking, memory. In sports activities it is not enough to know and understand the mental mechanisms which condition the sports performances, but also their optimization and their cultivation. The adaptation of the athlete is the adaptation of the mental system to the social cultural and sportive social

system. The mental system is under constant regulation, its potency influenced, driven by the instructive-educative process.

The development of mental qualities, bring about valuable educative contributions on the multilateral personalities of children and younglings through the education of collective team spirit, to form conscious discipline, to develop and educate about initiation, about will, about combativeness under rational control, to form moral skills with ethical values. Handball is an attractive and spectacular sport, based on the speed of movement and execution of the players, which develops in equal measure the entire organism, through its rich motor essence and its large varieties of movement which get to virtuosity, reflected through the handling of the ball through diverse conditions of balance and adversity.

The instruction in handball needs to be realized like a specialized process of formation and development of the athlete's personalities. From the methodological and theoretical point of view, the process of mental preparation consists of activities of communication, learning and leading. These activities are efficient as far as the psycho behavioural mechanisms are well-known by the coach, as well as the manager and the athletes.

Mental processes can be classified into the following:

a. Cognitive processes – which provide and process information about the surrounding environment, here referring to sensations, perceptions, representations, memory, imagination, language and thinking.

b. Regulatory processes – which regulate the physical energy necessary for the operation of every other mental process such as attention and will.

c. Stimulating-energizing mental process – motivation, emotionality.

d. Personality – the largest and integrator mental process, which correlates and valorizes all the other processes.

When we learn, we depend on the sensorial modalities that are involved in the processing of information. Studies have demonstrated that 65% of the population are visual (they remember 75% of what they have seen or read), 30% are auditory and only 5% are tactile-kinesthetic (Mills, 2002). The efficiency of learning depends on cognitive processing of information, both at the sensorial level (sensations, perceptions, representations) and also on the superior (thinking, memory, imagination, and speech).

Memory defines the temporal dimension of our mental organization, its integration on the three segments of the temporal horizon: past, present and future. Humans remember about 30% of what they see, 20% of what they hear, but under the condition of associating sight with hearing, humans remember approximately 65% of the received information by the two analyzers.

Types of memory: - by the content that is memorized, retained and reproduced: imaginative memory (visual, auditory and motor), affective (feelings and emotions), verbal-logic (forming skills and competences).

To understand the nature and significance of a mental process or another means to establish its role in a person's life and in the overall picture of behavior and activity (Golu, 2007, p. 401).

Materials and methods

Subjects

For the realization of the research, we selected 14 female handball players with ages ranging from 14 to 16 years, II juniors, being part of the Sports Club Association Veraflor Braşov. The sports training program took place during the 2015-2016 competitional year, assisting and participating in the trainings, under the direct guidance of the coordinator professor.

Method

In this research we used the psychopedagogical type of experiment with a single independent variable, made up of the strategy of development of the specific training, in order to increase the efficiency of the actions specific to handball and the development of dominant sensorial perception.

All the performed tests had as aim the finding of the "starting line", meaning the level from which forming starts, and finally the highlighting of the efficiency of the covered program. The initial tests, as well as the final ones, contained the same set of measuring and drills.

To analyze the data obtained by measuring and testing the subjects and their motrical performances, we used the following mathematical-statistic procedures:

-Student test – test t or Z after the formula;

-Arithmetic media; standard deviation; average error.

The coefficient of variability, we compare the value of the calculated "t" with the value of "t" represented in the charts of equivalence at the threshold of significance (error) ranging between 1% and 5%. The statistic techniques are used also for determining the differences and relations between the groups of data.

The dependent variable is represented by the signs of efficiency of the selected game actions for balancing the development of dominant sensorial perception.

In order to achieve an objective analysis on the dynamics and levels reached at present by the means of education, as well as to observe the pedagogical influences of using modern means of instruction, a series of works in the domain of psychology and philosophy have been studied. Lastly, analysis was conducted on bibliographical sources from the literature of the domain of physical education and sports, which provided us with the scientific foundation in the elaboration of instructive strategies, in leadership and evaluating the process of preparation on overall sportive lessons, at handball, the method of observation, recording and statistico-mathematics.

The method of the psychopedagogical experiment

Epuran (1995) defined the experiment as "a method of investigation which verifies a supposed relation (hypothesis data) between two phenomena through the provoking and controlling of them by the experimenter".

Within the pedagogical experiment, we used exercises of imagery, exercises of relaxation based on Schulz's method, ideomotor training and exercises for VAK activation. It needs to be mentioned that within the VAK activation experiment, we combined the internal dialogue with one talking with himself. The more senses we can stimulate the clearer and more intense the imagery will be. It is very important for an athlete to control the images that appear before him, because clear but uncontrolled images are unproductive.

Example: if an athlete imagines that he throws to goal during a jump, but every time he visualizes the ball on the floor during the dribbling which precedes the throw, this inability to visualize the path of the ball towards the goal might interrupt the player's concentration and might lead to missing the finalization of the throw.

The sensorial perceptive test – This test, which is simple and very practical, was made by Catherine Cudicio. With the help of this test, we obtain objective and quantifiable information about the psychological cognitive characteristics of the tested subjects, highlighting the differences between them, in a short time. The data that is obtained through this method constitutes the basis which is the starting point for the formative procedures.

The application of the test: Read the question and circle answer A, B, C or D, the one which seems closer to your personal experience. After you answer the 15 questions, make the sum total for each row. The row on which you count the most answers corresponds to your dominant way of perception.

A – auditory (the gathered experience consists in sounds and words)

B – visual (the gathered experience consists in images)

K – kinesthetic (the gathered experience consists in sensations and emotions)

D – inner dialogue (people who synthesize the whole experience through words and meaning, who talk in their minds).

In the pedagogical experiment we used imagination exercises, relaxation exercises according to Schultz's method, the ideomotor training and a VAK activation exercises. We must mention the fact that, in the VAK activation exercises, we combined inner dialogue with talking to yourself.

Mental or ideomotor training is a polisensorial process (it involves all senses), having, at the same time, visual, kinesthetic, tactile, spatial and temporal orientation components. It is useful to every athlete, and it is oriented towards forming mental maps for training/competition, establishing goals, concentrating attention, managing emotions, positive thinking, relaxation techniques, breathing and energizing.

Ideomotor training does not replace physical, technical or tactical training, but it is conducted alternatively. Applied means for the evaluation of the research are: throwing of the handball, shuttle (5X30m), movement in triangle, throwing of the ball at the goal from 7 meters blindfolded.

For each technical procedure, 5 operational means have been chosen, which include important elements for:

- visual-motor coordination – they aim at developing the static and dynamic balance, stimulating the peripheral vision, the correct perception of images, forming the body scheme, etc.
- the general motor coordination – they aim at developing the coordination abilities of the more and more complex movements of the body, they refer to all anatomical segments;
- fine motoring coordination – they aim at developing the coordination abilities of the hand muscles, in order to perform fine and precise movements;
- the forming of the body image and the knowing of the body scheme – they aim at the correct perception and identification of the body segments in static/dynamic position, with a various spatial display of the body segments and relating them to the surrounding spatial elements;
- the perception of position in space – they aim at the correct perception of one's own body, in relation to other surrounding objects and spatial landmarks, through capitalizing on the information perceived through visual, auditory or tactile channels;
- the perception of spatial relations – they aim the position of two or more objects in relation to one's own person and the relations between them. Scale of evaluation: - grading starts from 0-1, for each execution mistake (during the exercise), 0.5 points are subtracted.

Results.

The aim of this project is directed towards the optimization of the training process, with emphasis on certain aspects of developing the abilities of coordination nearer the dominant sensorial perception specific to handball.

The applied research methods and techniques are oriented towards the complex assessing and evaluating of the work samples.

Driving exercises to develop sensory perception.

Table 1. Statistical analysis of the drill of throwing the handball in initial testing

	N	Mean	Std. Deviation	Std. Error Mean
Throwing the handball	4	16,1625	.59354	.29677

Table 2. Statistical analysis of the drill of throwing the handball in final testing

	Test Value = 13.86					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Throwing the handball	7.759	3	.004	2.30250	1.3580	3.2470

After the application of the test, throwing the handball, between the initial and the final testing we can observe the growth of the values of 0.16-0.02 due to the serious implication of the athletes in performing the test (Tables 1 and 2).

Table 3. Statistical analysis of the applicative route in initial testing

	N	Mean	Std. Deviation	Std. Error Mean
Shuttle	4	5.4950	.04203	.02102

Table 4. Statistical analysis of the applicative route in final testing

	Test Value = 5.59					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Shuttle	-4.520	3	.020	-.09500	-.1619	-.0281

The statistical analysis of the applicative route where the athletes had the drill “shuttle 5X30 m”.

Table 5. Statistical analysis of the drill movement in triangle in initial testing

	N	Mean	Std. Deviation	Std. Error Mean
Move In Triangle	4	19.0175	.14975	.07487

Table 6. Statistical analysis of the drill movement in triangle in final testing

	Test Value = 20.36					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Move In Triangle	-17.930	3	.000	-1.34250	-1.5808	-1.1042

In the drill "Movement in triangle" the groups obtain averages above the final average standards recorded for the evaluation of the specific physical training. This fact is due to the uniform work conception adopted by those who controlled directly the process of sports instruction along the experimental period.

Table 7. Statistical analysis of the drill of throwing the ball at the goal from 7 meters blindfolded in initial testing

	N	Mean	Std. Deviation	Std. Error Mean
Throwing to the gate from 7 meters	4	8.0650	.04933	.02466

Table 8. Statistical analysis of the drill of throwing the ball at the goal from 7 meters blindfolded in final testing

	Test Value = 8.505					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Throwing to the gate from 7 meters	17.839	3	.000	-.44000	-.5185	-.3615

The difference between the initial and the final testing at the drill of throwing the ball at the goal from 7 meters blindfolded is due to the rhythms of growth in the availability for effort and at the same time of the perception of the position in space.

Discussions.

In the final testing, the findings showed that, in the period of time span from the start of the experiment at each technical procedure, the athletes have obtained better and better results. We consider that the recorded progress is due to the methodology applied in order to optimize the sensory perceptive channels, throughout the research.

1. Passes in two, from running, with throwing the ball at the goal from running, intensity: 80%, number of repetitions: 2x10 throws, working groups: in groups of two, active break 20 s walking.
2. Passes in three, with changing places, with throwing the ball at the goal from jumping, intensity: 80%, number of repetitions: 3x10 throws, active break 20 s walking.
3. Direct counterattack, with throwing the ball at the goal, from header, intensity: 80%, number of repetitions: 10 throws, working groups: 2 columns, active break 20 s walking.
4. Throws from 7 m, blindfolded, at the sound signal, number of repetitions: 10 throws.

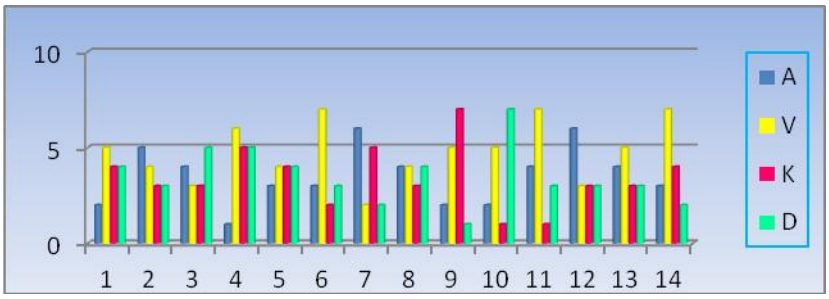

Figure 1. Final sensory perception testing

In the analysis of the results obtained in the initial testing and comparing it with those obtained in the final testing, we can observe changes in the case of auditory and kinaesthetic perceptions which influences the sports performance, results

presented in Figure 1. This fact is due to the direct implication of the athletes and the voluntary orientation of the athletes towards the task in achieving the goals.

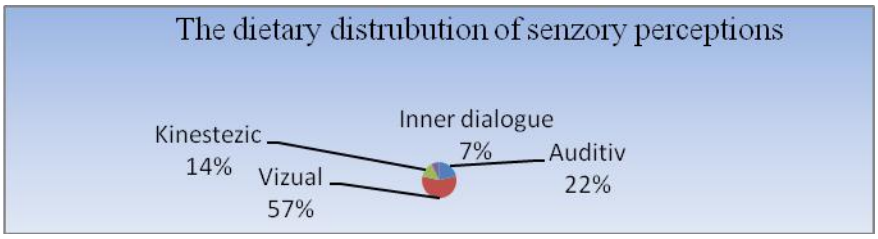

Figure. 2 Final testing of the sensorial perceptions

After applying the Sensory perception test, the results highlight the fact that, in the handball team, 3 players have a predominantly auditory sensory perception, which represents 22%, 8 players have a predominantly visual sensory perception, representing 57%, 2 players have a predominantly kinaesthetic sensory perception, representing 14%, and a single player has predominantly inner dialogue sensory perception, representing 7%.

Analyzing the results obtained at the initial testing and comparing them with those obtained at the final testing, one could observe changes in the case of auditory and kinaesthetic perceptions, which influence performance in sports. This fact is due to the direct implication of the athletes and the voluntary orientation towards the task in achieving the goals.

The obtained results allowed us to formulate some recommendations of methodical nature, which contribute to the optimization of the training in this branch of sports.

Obviously, we cannot talk about a sensory perception system, superior to the others, but rather a combination of these, with the possibility of influencing and perfecting them through education, self-education and requests. It would be ideal to use all these systems equally, in order to have a higher flexibility in our own way of thinking, learning, efficiently communicating with all the other patterns.

Conclusions

Sports has mostly favourable educational effects, which lead to mental improvement, so highly necessary in the life of athletes and outside of it; unfavourable effects are harder to identify at junior age, because the personality of each individual is in formation, and, advancing on the ladder of performance, undergoes changes, depending on the requirements of the stages covered.

The knowledge of the coach about the psychological cognitive characteristics of the athletes has a high importance in the process of physical training, in communication, in choosing the means of instruction, education and stimulation, taking into account the individual features of the athletes.

All the results of the research contribute to confirming the hypothesis, namely that applying a specific methodology in training contributes to the development of the secondary channels of perception in training and, implicitly, to the growth of the general level of individual/collective sports performance and much more.

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