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FEEDBACK IN THE TRAINING PROCESS

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Abstract. *The paper explains the role of feedback in sport training communication. The author concludes that there is no success full communication without feedback; There fore a special importance is given to the attempts at constant extending and additional explaining of feedback information in the training process. The author emphasizes the objective and complex control of the training as the most important element of feedback in the trainer - sportsman system. Also, the author points to several level of decoding of feedback information obtained by the control of training. In order to illustrate this problem an example from sports gymnastics.*

Key words: *feedback, communication, training process, sports gymnastics*

1. INTRODUCTION

Our ability to communicate as well as forms of communication are most often accepted as something taken for granted and thus easy to understand. Whenever people make a contact, they communicate. This process is of essential importance for man due to its relevance for the development of his personality and for the formation and continuous existence of human groups; thus it becomes a crucial aspect of human relations regardless of the sphere of social life. That is why a great number of authors consider communications as the basic social process.

Regarding the definition of Berelson and Steiner (which is most widely used), communication represents ″an act or process of transmitting messages, ideas, feelings, knowledge, etc.″. The problem of communication is the subject matter of a special scientific discipline known as communicology, in addition to other scientific disciplines such as psychology, biology, philosophy and others; at the same time, it also belongs to the field of sports.

Communication in the sports practice is a complex and multidimensional process which takes the form of a mutual influence of many factors most of which have the

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structure and characteristics of the system (the system coach-sportsman, the system coach-parent-sportsman, etc.). Besides, this process is of an exceptionally dynamic character. These two above-mentioned facts are the reason why a cybernetic approach is applied more and more often not only to the studying of the process of ″managing″ the training process, but also to the studying of ″communications″ in the sports training. Accordingly, it is necessary to mention that cybernetics does not only study the system management, but also the information flow within and between the systems.

2. CYBERNETIC APPROACH TO THE TRAINING PROCESS

At present the level of achievement in the top sports is so high that sportsmen, by completing their system of exercising, can reach or exceed it only by means of raising the efficiency level of the training work. These demands are mostly liable to be satisfied through an optimal management of the overall sports training process. Concerning this, it is necessary to point to the fact that efficiency of the training process management cannot be completely explained unless the importance of communication is stressed. ″What has been proved is the scientific fact that the essence of managing any system is made of circulation of information, that is, of communication″ [2].

The training process is denoted, from the cybernetic aspect, as a complex and dynamic system ″coach-sportsman″ in which the coach has a managing and correcting function while the sportsman is the guided part of the system. These two systems are mutually connected by the communication can nets through which two intentionally different kind of information circulate, namely:

a) those carrying a message from the managing system (direct connection), and,

b) those carrying a message to the managing system (″feedback″).

Since this is not only the case of a one-way transmission of managing information, but rather an exchange of messages between the coach and the sportsman, we can freely say that a mutual interaction of these two subjects in the training process has the character of communication (″only communication is exchanged, while information is reported, that is, it is transmitted one-way″ [2]). But the main communication objective is an optimal management of the training process, that is, the transformation of the sportsman′s capabilities by means of managing information given by the coach, namely, his transformation from an initial position to some other more qualitative state.

Most authors dealing with this issue stress that the management effect mostly depends on the quality and quantity of the managing information (information obtained by the sportsman); still they more emphasize the importance of the ″feedback″ information obtained by the coach.

3. FEEDBACK IN THE FUNCTION OF THE TRAINING PROCESS

The training process is very effective only in the case when it is accurately directed and controlled from the beginning to its end. For these reasons the feedback is very important since it is through it that information is circulated about a sportsman′s behavior - about momentous and cumulative effects of the training work.

Namely, if the coach, regarding the feedback, does not have accurate and objective information at his disposal, he may make a mistake in judging a sportsman′s state; therefore, on the basis of wrong information he may give a wrongly directed task (wrong managing function). In that sense, the training process becomes impossible without its feedback communicative-informative component. Though the guidance of the training process cannot be provided only by this information background since the feedback information is only a corrective condition of the training practice and thus it is indispensable.

In this paper an emphasis is put on the importance and necessity of the ″feedback″ in the sports training process.

In view of the authoritative-managing role of the coach, communication in the training process has mostly a subordinate form, that is, the coach most often functions as a communicator, while the sportsman assumes the role of a recipient. However, in order to get to know better the sportsman he works with, that is, in order to obtain feedback information about the sportsman, the coach often turns to an interpersonal form of communication. This form assumes an alternating exchange of the roles of the communicator and the recipient between the coach and the sportsman. By an alternating exchange of messages, the sportsman becomes the subject as well as the active participant of the transformation process instead of being just a recipient and performer of managing information.

In addition to this form of communication, and for the sake of obtaining feedback information, it is also necessary to establish a mediating form of communication (coach - mediator - sportsman), especially in the work with younger categories of sportsmen. Namely, these forms of communication give the coach a chance to obtain, in personal contact with parents, teachers, doctors, and others, important information about the sportsman he works with, that is, the information he could not get by means of controlling the training. On the basis of this information the coach will discover causes of some phenomena in the sportsman's behavior as well as many shortcomings in the training process; thus he will be able to take necessary steps to remove these shortcomings.

However, the acquisition of objective feedback information, on the basis of which the coach will be able to find out whether his training process is proper or not, is not only possible by verbal communication (direct and indirect) with the sportsman (it only helps to complete ″feedback″), but mostly directly by means of adequate measuring and controlling indicators. Namely, the process which does not only rely upon feedback information obtained by measurement and control cannot be considered as optimal since it is not known what direction the progress is taking place. An efficient management of the training process is possible only on the condition that reliable information about the sportsman's training state is known as well as about the changes caused by the applied means, methods and efforts.

Concerning this, it is essential to mention several important moments of the feedback formation about some problem related to the training process on the basis of information obtained by the training control; these are: a) act of inferring information from the objective reality (tracing or measuring), b) numerical presentation (recording and classifying), and, c) value-defining (analysis). Once the feedback information is value-formed, that is, compared with the plan, the previous state, etc., and analyzed, it can provide respective knowledge and it becomes important for further control of the training

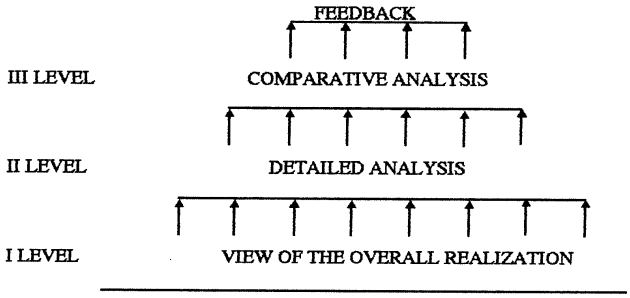
process. However, in order to obtain as complete ″feedback″ as possible, it is necessary to decode the control-obtained facts decoded into several value levels. What is at issue here is the need to infer respective knowledge from many levels, namely, from the following ones:

I level - Information (results) decoding of the overall realization of the traced or measured indicators. This level represents the most narrow aspect since it gives only elementary knowledge, insufficient for a complete view of a given problem.

II level - A detailed analysis of all the indicators thereby new and more profound knowledge is gained. However, even thus formed ″feedback″ is incomplete unless the following level is taken into consideration.

III level - A comparative analysis. Since most of the indicators are mutually related, more essential details are discerned by their mutual comparison.

The procedure for acquiring complete ″feedback″ about a certain problem related to the training process can be best illustrated by



In order to make the procedure of decoding the feedback information more clear, we shall give an example of the control of the dynamics of the annual training load of the team of young gymnasts 8-10 years of age, who are the members of the Gymnastic Club of Ni{. The training load represents a definite value of training means interaction, as first of all, on the functional structure of the sportsman's organism. In terms of QUANTIFICATION (numerical expression), the size of the training load can be defined by the two basic parameters: volume and intensity.

By "volume" we mean the total sum of training labor (the number of training hours, a micro-cycle, a middle-cycle a macro-cycle) which in sports gymnastics is expressed in terms of:

a) the number of the realized training units directed to the development of the basic and primary motor abilities in this sport (the volume of physical preparation, Table 1, ordinal number 1a)
b) the number of the usual realized movements of sports gymnastics (the volume of technical preparation, Table 1, ordinal number 1b).
c) the total sum of these two volumes is the total load volume (Table 1, ordinal number 1).
d) the relation of the volumes of physical and technical preparation in the annual cycle is given under the ordinal number 2.

"Intensity" represents the degree of the used effort in the time unit, that is, the intensity of labor, which is expressed by the index of intensity in sports gymnastics, (Table 1

ordinal numbers 3,4). In order to calculate this index we need the following data: the total time of the training unit duration (Tt), the number of approaches (NA), and the number of realized elements (NE). The index of intensity can be calculated applying the formula Ii = NE/NA+Tt

Table 1 shows an annual realization of some specific indicators about the size of the volume of the training effort; the plan is in the third column, the realization is in the forth one, while the realization percentage is in the fifth one.

Table 1. Realization of the annual of the training cycle of young gymnasts of the gymnastic club "Niš"

No.	PLAN CONTENTS	PLAN	REAL.	%
1	Overall Effort Volume (NE)	63899	54656	85
1a	Volume of Physical Preparation (NE)	25404	17766	70
1b	Volume of Technical Preparation (NE)	38495	36890	96
2	Preparation Ratio PP:TP	40:60	33:67	82/112
3	Intensity of PP (Ii)	2.9	2.9	100
4	Intensity of TP (Ii)	1.85	1.75	98

Looking through these indicators the coach gets the insight into the realization of the annual training load. However, these pieces of information are insufficient for the complete comprehension of the realization and the accuracy of the dynamics of the moving training load (incompletely value - defined feedback, LEVEL 1).

It is necessary to examine in detail each indicator and the moving of training load at particular phases and compare them to the planned values and the theoretical assumptions about the moving of the training load in the macro-cycle. In that way, one could find out more about this problem and, as a result of that, feedback will be value-defined in a more complete way.

The technical preparation could be used as a concrete example. The realization of technical preparation in the annual cycle which was less by 4% percent Main the planned can be keen in the Table above. The feedback information obtained in this way cannot by sufficient for the coach, but it represents just a beginning in the further search for the hidden information to complete the feedback. It is necessary to analyze in greater detail the volume of technical preparation, (LEVEL 2).

Table 2 gives a survey of the realization of the overall volume of the technical preparation and the realized volume upon the devices, as well as the ultimate sum in an annual cycle. The plan is given in the first line, while the realization is in the second; the percentage of the realization is in the third row.

Table 2. Survey of the realization of the training preparation volume in an annual training cycle of young gymnasts of the gymnastic club "Niš"

Device	Floor ground	Horse	Circles	Jump over	Loom	Horizontal bar	Stp	Σ
PLAN	5052	1494	2471	1560	4642	2922	20354	38495
Realization	4649	1326	2338	1277	3817	2558	20925	36890
%	92	89	95	82	82	87	103	96

Table 2 gives us much more information about the realization of the stated problems. It can be noticed that the team of young gymnasts achieved the best results in the area of specific technical preparation, even 3% percent above the planned (column 8), but the worst results were at the loom-training and jumps that is, one 18% percent less than planned.

Ofcourse, the more complete information can be obtained by observing the value of training load at particular phases and periods. Beside the information about the realization, one can also obtain the picture of the dynamics training moving load during an annual cycle. To that purpose, it is necessary to use linear graphic representations (phases and periods will be put on the horizontal line, and the value of the realized training units number on the vertical line), because of the more illustrative presentation and clearer insight.

All these indicators about the dynamics training load do not give a complete feedback if they are not finally compared with the results of the transformational process control (LEVEL 3). Multidimensional (integral) control of the athletes' training in the system of the training managing process enables the determination of the efficiency of the applied means and methods and the load, (the above mentioned case) and at the same time the correction of training process. In fact, the competitions (them selves the control ones) are the ideal means of the gymnasts training control but, they can mot be used in an effective way because of various reasons (an emotional state non-objectivity in judging), Besides, the results of the competitions and the dimensions which condition the sports achievements in order to mark them in an effective way, the existence of the control training and the scale of norms are necessary. As a rule, the same measuring instruments with the same method of realization as in diagnosing are applied to the athletes training control determination.

Thus set-up scheme of feedback decoding is closed within the horizontal plane while it is open in the vertical one which means that it provides for other conceptions and additions.

Only by this way of decoding the obtained information it is possible to get to those hidden data ("feedback") which are not discernible at first sight; on the basis of them the coach can successfully re-encode his managing information, that is, he can correct and direct the training process in a desired direction.

4. CONCLUSIONS

1. On the basis of all that has been said it can be concluded that communication in the training process represents an essential mechanism which is necessary for an optimal management.

2. The condition of a successful communication in the training process surely primarily depends upon the feedback information quality in the selection process and upon the feedback information obtained during the transformation process.

3. With no feedback elements it is impossible to re-encode managing information; at the same time, the overall interaction between the coach and the sportsman loses its communicative component.

4. The offered "feedback pyramid" in the process of decoding message shows that the

system is open in its vertical aspect, that is, that the possibilities of ultimate knowledge are limitless.

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"FEEDBACK" U TRENAŽNOM PROCESU

Saša Veličković

U radu je pojašnjena uloga feedback-a pri upravljanju i komuniciranju u trenažnom procesu, odnosno u sistemu trener - sportista. Autor ukazuje da se uspešno kibernetičko upravljanje, kao i uspešna komunikacija ne može ostvariti bez prisustva kvalitetne povratne veze, kojom se obezbeđuje neprestan dotok informacija o stanju podsistema kojim se upravlja (sportista). Ukoliko trener (upravljački podsistem) po liniji povratne veze ne raspolaže tačnim i objektivnim informacijama, on može načiniti grešku prilikom ocenjivanja stanja sportiste i na osnovu pogrešne informacije dati pogrešno usmeren zadatak (pogrešnu upravljačku informaciju). Kao najbitniji elementu povratne veze autor ističe objektivnu i kompleksnu kontrolu treninga. Takođe, ukazuje i na nekoliko nivoa dekodiranja povratnih informacija dobijenih kontrolom treninga. U cilju ilustracije problema dekodiranja dat je primer iz oblasti spotrske gimnastike.

Ključne reči: *komunikacija, povratna veza, trenažni proces, sportska gimnastika*