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Original Article

THE INFLUENCE OF PSYCHOLOGICAL TRAINING ON THE MANIFESTATION DYNAMICS OF CONFUSION AND BEWILDERMENT GENERATED BY COMPETITION STRESS

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Abstract

The purpose of this research envisaged the dynamics of the manifestation of the confusion-bewilderment mood states in the professional middle distance and long distance runners, during stress-generating competition situations.

Methodology. Assessing the manifestation dynamics of the confusion-bewilderment psychological moods, in 3 different stages over the course of 6 months (February-August 2011), the research focused on the attitudes and the observable and measurable behavior of 12 subjects with various experience in practicing track and field and that particular event. The athletes, under their freely expressed consent, were subjected to three psychological tests, in three different stress situations: before two major competitions (national championships - selection competitions), and at the middle of the period between the two important competitions. The research instrument was the P.O.M.S. test (the Profile of Mood States, described by McNair, 1971).

Results. The application of the special psychological training program, adapted to the middle distance and long distance running competition characteristics determined, after 6 months of intervention, a statistically significant decrease in the confusion-bewilderment moods. The statistical analysis of the data allowed the observation that at the end of the psychological training program, the results for the C-B variable have significantly dropped between the first test and the third one, which indicates an increase of the regulation, therefore of the control, gained by the subjects before the actual race, of their states characterized by disorientation and confusion in thinking.

*Conclusions***.** The results of the research allow the observation that in the practice of professional track and field events, psychological trainings adapted to their specifics can diminish the psycho-affective moods characterized by bewilderment, uncertainty, disorganization, confusion. The condition that imposes itself is that these trainings must be conducted over an optimal period of time (under the coordination, or with the collaboration of a psychologist), and the periodic assessments should be always present, in order to observe the effects of these trainings, the adaptations to the determined reactions, and the changes in attitude in the subjects' behavior.

Introduction

Achieving top athletic performance (avoiding the possible failure) in various track and field events needs the approach of a complex and varied training, in which the interaction between the psychological and the motor components must be analyzed and coordinated in relation to the complexity of the reactions caused by multiple factors.

Previous studies have demonstrated that success and failure in professional sports, as well as the methods of reaching the goals and avoid failure, are directly or indirectly dependent on the athletes' interaction with manifestations of genetic, bio-psychological, or environmental factors (Martens, 1987, Epuran, 1990, Weinberg, 1995, Niculescu, 1999, etc). One of these factors is the athletes' attitude regarding the control and management of competition situations with a high level of bio-psycho-affective tension (Cashmore, 2002, Weinberg, Gould, 2007).

This bio-psycho-affective tension, generated by competition factors, usually provokes states of anxiety, disorganization, and bewilderment (confusion in thinking), nervousness, physiological reactions that have a limiting effect on the performance. From our personal experience, as well as from reading the opinions of other specialists, we noticed that this bio-psycho-affective tension provoked by competition can be also a favoring factor for the performance (Thomas, 1983, 1993), a situation that depends also on the athlete's personal, subjective experience.

The analysis of the effects provoked by the physical and psychological tension before, during, and after an event with a high affective-emotional charge, and a high biological demand, represented a starting point for several vast researches regarding the people's moods / psychological states. The result of these researches has been ulteriorly transformed in standardized research instruments, which are still used

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today to study certain aspects (such is the case of the POMS test, described by McNair, in 1971, a test we used in this paper to determine the possible effects that the specially conceived psychological training could have on the dynamics of certain moods that are often present in professional athletes during competition periods - states of confusion, disorganization, bewilderment).

The opinions expressed in the professional literature in regards to the confusion and bewilderment mood states encountered in situations with a high level of psychological tension (such as professional sports competitions) tend to associate these moods with the classical emotional dimension of organized-disorganized, closely linked to anxiety states (McNair, Lorr, Droppleman, 1971).

Research Methodology

Research Hypotheses

- the stress that is specific to competition situations that are very important to the professional middle distance and long distance runners can generate increases in the psycho-affective dispositions that are characterized by confusion in thinking and slight bewilderment;
- the application of a psychological training program, adapted and related to the competition system of the middle distance and long distance track and field events, can determine, after a longer period of time, a decrease in the confusion-bewilderment moods that were generated by competition stress.

This research, part of a larger study, envisaged the analysis of the psycho-affective moods of *12 professional middle distance and long distance runners*, from 5 Romanian sports clubs, with an average age, at the beginning of the experiment, of 22 (minimum 18, maximum 28), with an experience in track and field between 5 and 14 years, and a specialization in the middle distance and long distance events of minimum 4 years. The subjects' athletic performances range from good to very good (from nationally medaled to multiple national and Balkan champions, participants and medaled in various international competitions).

The research instrument we used was an adapted form of the P.O.M.S. test (the Profile of Mood States, as described by McNair, 1971). Based on indications, the scores recorded from the applied questionnaire were transfered on a specific test profile chart, comprising T-scores for each factor. The graphical representation of the data shows "iceberg"-type diagrams, considering the visible side as being delimited by a line found at the 50 point mark. The variables subjected to the POMS test analysis are: tension-anxiety, depression-dejection, anger-hostility, vigor-activity, fatigue-inertia, and confusion-bewilderment.

This paper focused on the ***C-B*** variable (**confusion-bewilderment**), which expresses bewilderment and confusion in thinking. This can represent, according to psychologists, a criterion of cognitive effectiveness, possibly a product of anxiety, or of similar states.

Trying to determine the dynamics of the manifestation of the moods characterized by confusion-bewilderment in those situations in which the competition generates stress (and its varied effects), 3 tests were applied in 3 moments of major importance for the subjects' professional activity (3 major competitions in the competition season that were very important for the subjects):

- the initial testing (February 2011, National Senior Championship, indoor, goal - medal);
- the intermediary testing (June 2011, International Championship, outdoor, goal - time);
- the final testing (August 2011, National Senior Championship, outdoor, goal - medal);

The tests, applied in the presence of a psychologist (who supervised the assessment), were conducted in the first day for each of the three competitions, in the morning, after the athletes had woken up and had breakfast.

The utilized means system

The research was conducted through a specific psychological training program, over the course of 6 months. Thirty means were applied, destined for a specific psychological training, in 48 lessons, throughout 24 weeks. The specificity of the lessons was adapted, mainly to regulate the dispositions generated by the 6 variables evaluated through the POMS test.

The methods used in the subjects' psychological training, methods that the coach can use in his work to improve the regulation of mental states in athletes, involved: communication, suggestion and autosuggestion, awareness, biofeedback, development of self-esteem and coping in athletes, as well as ensuring a good neuro-psychological recovery, strategies for improving the activation, strategies for energizing the athletes, pep talks, bulletin boards, training before competition, immediate strategies for self-energizing.

We must mention that the athletes' training before the three envisaged competitions (the final 6 days before entering the competition) did not include any more high levels of intensity or volume, the runners performing standard training sessions, specific to the week before the competition. These training sessions have subjected no longer the body to new adaptations or stimuli, having as main goals: the active rest, maintaining the obtained energy to an optimal level, the psychological and tactical preparation for the competition.

Results

The data recorded after the 3 assessments regarding the confusion-bewilderment moods in all the professional athletes subjected to this analysis are shown in Table 1.

After transforming the recorded points into T scores (Table 1), according to the profile chart, and taking into account the value-imposed limit of 50 (benchmark), the analysis of the data for the initial testing (*t1*), regarding the confusion-bewilderment moods expressed by the subjects before an important competition, revealed that the ***C-B variable*** reached an average score of **53.42** (translated by a slight state of confusion before the actual beginning of the race). Out of the values presented in Table 1 - *t1* one can see that 66.67% of the subjects (8 out of 12) reach values over 50. Two subjects stood out: M.I. (a value of 61) and C.I. (a value of 64). The discussions we had with the subjects allowed us to see a possible cause for the high values for the C-B variable - the existence of a low level of communication between them and the coaches;

The analysis of the data recorded during the **intermediary testing** (**t2** transforming the obtained points in T scores, according to the chart, benchmark value - 50) before the second competition, gave the following results:

- the values of the ***C-B variable (53.25)*** still present a slight mood of confusion-bewilderment in the athletes, almost identical (slightly decreasing, but not significantly) with the one measured and assessed in the initial testing. Knowing the fact that the C-B variable can represent, according to psychologists, a possible product of the anxiety states that are specific to the situations with a high degree of psychological tension, one could conclude that the applied psychological training did not "show" its effects yet, after 3 months of applicative intervention (February-June, between *t1*and *t2*);
- the highest values for this psycho-affective mood, characterized by confusion in thinking and bewilderment before a competition, were recorded by the same two subjects, training and club colleagues: M.I. (61, the same as in the initial testing), and C.I. (66, higher than in the initial testing);
- the individual values in the first two tests present, in comparison, modifications that do not support a constant tendency (some values decrease, others increase). Still, the t2 average value is close to the t1 average value.

For a much more eloquent scientific and statistical argument, the Student's t-test was applied, to determine the significant differences between different variables, at the significance threshold of $p < 0.05$. In order to verify the existence of significant differences regarding the psychological moods of confusion-bewilderment of the subjects, determined by competition stress during the first two tests (initial and intermediary), the t-test for paired samples was applied, having as independent variable the variable *test* (t*est_1* versus *test_2*), and as dependent variable, the ***C-B*** variable, specific to the psycho-affective moods profile (POMS). Thus, in the case of the C-B variable, there are no significant differences (Table 2) between the results for test 1 and test 2 [$t(11) = 0.077$, $p = 0.940$].

The ending of the period of application of the psychological training program has imposed the last testing (***t3***), to determine the modifications in the subjects' behavior. In a synthesis, the results show that:

- the average value of the C-B variable (47.83) has dropped under the benchmark limit (50) imposed by the profile chart;
- in this last testing, the values of the ***C-B variable*** have decreased (from 53.25 to **47.83**), confirming the decreasing tendency of the other variables' values (Figure). Considering this last average value (47.83), one can say that the subjects have positively regulated their manifestations caused by stress before an important competition, and, in this case, they have started the August 2011 competition with a visibly decreased level of the psycho-affective moods characterized by confusion, bewilderment, maladaptation;

The verification of the existence of significant differences regarding the psychological moods of confusion-bewilderment of the subjects, determined by competition stress during the last two tests (intermediary and final), was done also by applying the t-test for paired samples, having as independent variable the variable *test* (t*est_2* versus *test_3*), and as dependent variable, the ***C-B*** variable, specific to the psycho-affective moods profile (POMS).

In the case of the *C-B* variable, *there are significant differences* (Table 2, Figure 2) between the results for test 2 and test 3 [$t(11) = 2.977$, $p < 0.05$]. By following the averages, one can see that the psychological training program meant to regulate the athletes' reactions to competition stress, the C-B variable results have significantly decreased between t2 and t3.

The study of significant differences regarding the psychological moods of confusion-bewilderment of the subjects, determined by competition stress between the initial test (T1) and the final test (T3), was conducted again by applying the t-test for paired samples, having as independent variable the variable *test* (t*est_1* versus *test_3*), and as dependent variable, the ***C-B*** variable.

In the case of the ***C-B*** *variable, there are significant differences* between the results for test 1 and test 3 [$t(11) = 2.944$, $p < 0.05$]. By following the calculated averages, one can see that at the end of the psychological training program, the results for the C-B variable have significantly dropped between the first test and the third one (Tables 2 and 3), which indicates an increase of the regulation, therefore of the control,

gained by the subjects before the actual race, of their states characterized by disorientation and confusion. One can estimate that by dropping the C-B average values, the subjects showed, at the end of the intervention, a possible increase of the cognitive effectiveness, a fact confirmed also by the superior results recorded in the third competition.

The average value of the difference between the initial and the final testing for C-B is the second most important, the decrease in the final value highlighting an improvement of the subjects' ability to regulate their confusion and bewilderment states generated by the competition stress;

In order to have a point of reference as objective as possible for comparing the subjects' behavior during the three moments of testing, we transformed the performances recorded during competitions into points, in compliance to the IAAF regulations, and we did an analysis of the correlations between the affective manifestations and the recorded performances.

The qualitative analysis of the statistical correlations regarding the sense of the modifications of the C-B variable values over the course of the applicative intervention highlights the fact that the **C-B variable**, even though initially did not correlate with the score recorded by the subjects (Table 3), after the intervention program it arrives at a negative correlation with the recorded score, as a result of the participation in the third and final important competition studied in this research. As the C-B variable involves states and psycho-affective moods characterized by confusion in thinking, bewilderment, and it is a negative dimension, and the correlation became negative, one could estimate that as the subjects tend to record lower T scores for this dimension, they will tend to have better performances at their middle distance and long distance running events (this happening only after going through the intervention program).

Discussions

One can observe from the analysis of the data (shown in Table 2 and Figure 1) that the applied psychological training did not show any effects yet after 3 months of applicative intervention (February-June, between *t1* and *t2*). We believe that this is possible also due to the fact that the focus in this period of time was not on approaching the confusion and bewilderment moods, the recorded values in the initial assessment being slightly over 50 (more precisely, 53.42), and did not demand an intense approach, as was applied in the case of the other variables that were studied, but are not the subject of this discussion. One can see, though, in Figure 1, that the values that imposed a more intense focus were the ones belonging to the tension-anxiety - T-A, and anger-hostility - A-H moods, which had much more pronounced initial values, and whose diminishing brought the diminishing of the confusion-bewilderment moods (which are influenced by the presence of anxiety states).

Still, one can say that the POMS profile recorded by the subjects of this study before an athletic competition is slightly different in the intermediary testing to the one in the initial testing (Figure 1), having a kurtosis with a decrease of the importance of the effects caused by the T-A (tension-anxiety) and A-H (hostility, irritation) moods, and a slight orientation toward the V-A variable (mobilization, vigor, and psychological activation). This aspect encouraged us in continuing the application of the psychological training program elaborated for this research.

After the 6 months of applicative intervention on the subjects, their results clearly expose a diminishing of the confusion-bewilderment states, the final values (47.83) being under the benchmark of the POMS test. This confirms the necessity of applying, over a longer period of time, of certain components of athletic training in the general and complex training of the track and field athletes, envisaging the diminishing of certain factors that can be perturbing for the athletic performance.

The obvious significant decrease in the C-B variable's values (Figure 3), with some exceptions, shows an improvement of the athletes' ability to regulate their states of bewilderment and confusion in thinking, generated by competition stress (one can observe the differences between the initial testing - brown, the intermediary testing - blue, and the final testing - green).

The comparative analysis of the profiles recorded by the subjects during the three assessments (Figure 1) suggests a clear modification of the psycho-affective moods, from one competition to another, with the orientation of the "iceberg" profile from the anger-hostility (A-H, brown in the figure) component toward the component of vigor and positive psychological mobilization (V-A, green). One could say that the modification of the mood orientation was due also to the diminishing values recorded by the subjects for the variable C-B (the decrease of values under 50 indicating a possible increase in the cognitive effectiveness, the confusion in thinking being diminished).

We must specify the fact that the data presented in this paper are a part of a larger study, conducted during doctoral studies (Alexe, 2012). Because of the limited space given for this paper, many details that would have clarified the central idea that was analyzed here, were not mentioned. We tried to highlight only certain details that we thought would be relevant for the discussed theme, and to accentuate certain aspects (by putting them under an original light). We also believe and support the idea that a deeper understanding of certain possible relationships between the specific psychological training and the dynamics of the confusion and bewilderment moods can be achieved only by studying the relationships between these moods and other essential factors (other moods, biological factors, ambiance, human relationships, etc.).

Conclusions

The statistical analysis of the data recorded during the first two tests allowed the observation that the stress that is specific to competition situations that are very important to the professional middle distance and long distance runners can generate increases in the psycho-affective dispositions that are characterized by confusion in thinking and slight bewilderment. This conclusion confirms the first hypothesis.

The application of a psychological training program, adapted and related to the competition system of the middle distance and long distance track and field events, can determine, after a longer period of time, a decrease in the confusion-bewilderment moods that were generated by competition stress. This conclusion, defended by the previously presented statistical data, confirms the second hypothesis of the research, and accentuates the importance of selecting original methods, created to develop the athletes' abilities to control their psycho-affective moods that appear in crisis situations, as well as the importance of applying them over time, adapting them for the training.

The effectiveness of a psychological training program applied to professional middle distance and long distance runners can be confirmed by the athletes adopting fighting attitudes, of psychological mobilization, before a competition.

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Table 1 - Data recorded by the subjects during the POMS test, variable C-B

No.	Initials	gender	age	*t1*	*t2*	*t3*	average
3.	G.I.	M	23	50	52	46	49.33
2.	S.A.	M	20	55	44	57	52.00
3.	I.C.	M	26	44	44	41	43.00
4.	C.V.	M	20	39	53	44	45.33
5.	P.G.	M	21	55	59	48	54.00
6.	G.A.	M	23	59	48	43	50.00
7.	Z.I.	M	28	59	57	50	55.33
8.	M.I.	M	19	61	61	55	59.00
9.	F.C.	F	23	52	55	44	50.33
10.	B.C.	F	19	50	57	52	53.00
11.	B.A.	F	24	53	43	37	44.33
12.	C.I.	F	18	64	66	57	62.33
		Average	22.00	53.42	53.25	47.83	51.50
		Max	28	64	66	57	
		Min	18	39	43	37	
		ampl	10	25	23	20	
		S	3.05	7.13	7.34	6.48	
		Vc	13.84	13.34	13.78	13.54	

Table 2 - The t test for comparing the average values between the situations *test_1, test_2, and test_3*

Variable	Test	Average	Standard deviation	t Test results

C-B	Test_1	53.41	7.13	t (11) = 0.077, p = 0.940
	Test_2	53.25	7.34	
Variable	Test	Average	Standard deviation	t Test results
C-B	Test_2	53.25	7.34	t (11) = 2.977, **p = 0.013**
	Test_3	47.83	6.48	
Variable	Test	Average	Standard deviation	t Test results
C-B	Test_1	53.41	7.12	t (11) = 2.944, **p = 0.013**
	Test_3	47.83	6.48	

Table 3 - The Pearson r correlation coefficients between the values of the C-B variable and the values from the students' scores recorded during the analyzed track and field competitions

Variable	**Score 1 (N = 12)**	**Score 2 (N = 12)**	**Score 3 (N = 12)**
C_B1	r = – 0.071 p = 0.826		
C_B2		r = 0.082 p = 0.799	
C_B3			r = – 0.288 p = 0.363

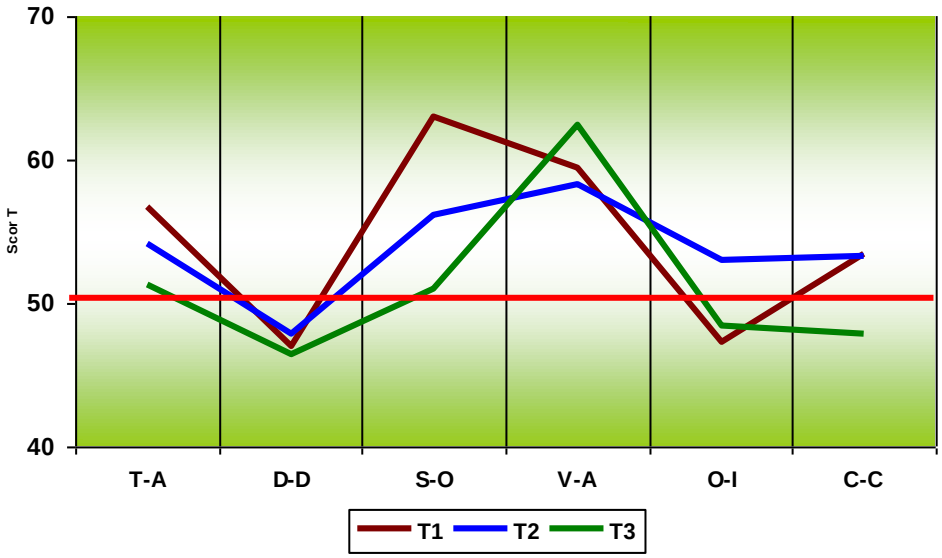


Figure 1
Comparative analysis regarding the profile of the psycho-affective moods in all three tests

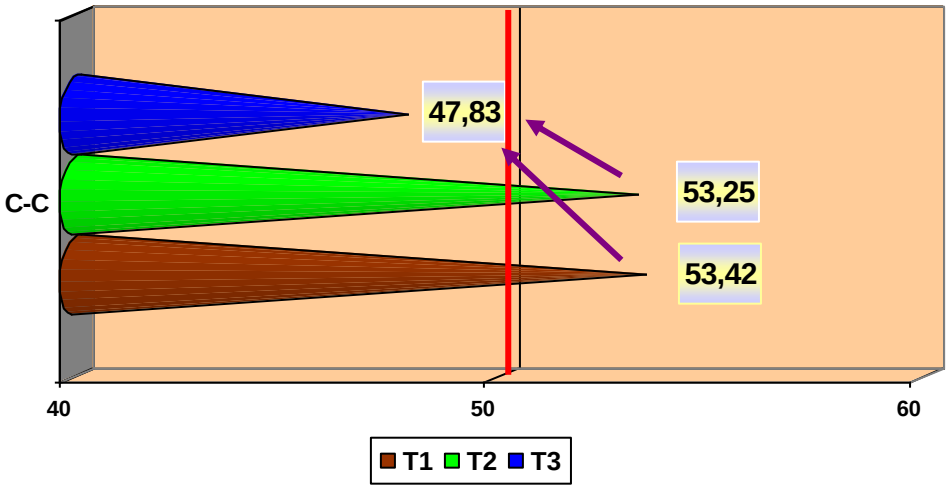
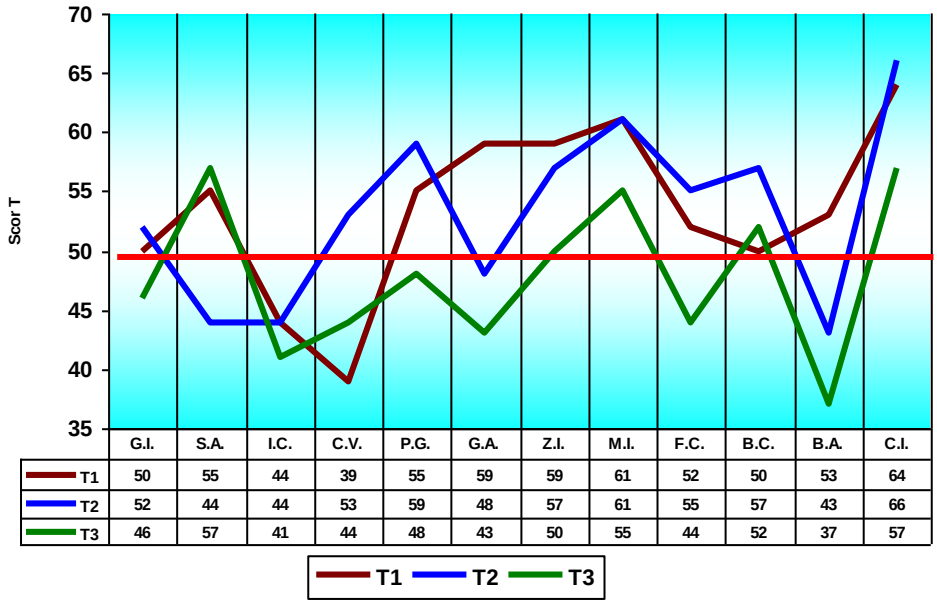


Figure 2
Comparison of the average values recorded during the 3 tests for the C-B variable between the *intermediary testing (T2)* and the *final testing (T3)*



	G.I.	S.A.	I.C.	C.V.	P.G.	G.A.	Z.I.	M.I.	F.C.	B.C.	B.A.	C.I.
T1	50	55	44	39	55	59	59	61	52	50	53	64
T2	52	44	44	53	59	48	57	61	55	57	43	66
T3	46	57	41	44	48	43	50	55	44	52	37	57

Figure 3
Development of individual values for the ***C-B variable*** in the three moments of the testing (initial test – T1, intermediary test -T2, final test -T3)