

# HOW TECHNOLOGIES “ROFES” AND “COLOURPSYCHOSOMATIC-ROFES” WERE APPLIED WITHIN THE LIMITS OF PREPARING YOUNG HIGHLY QUALIFIED SPORTSMEN FOR TRAMPOLINE TUMBLING COMPETITIONS

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In order to enhance prestige of the Russian sport on international level, elaboration and implementation of measures for improving training system for preparing highly qualified sportsmen and sports reserve remain one of the highest priorities. (P.V. Bundzen, L.G. Unestal, 2004; L.V. Volkov, A.V. Alekseyev, A.M. Gonopolskiy, 2008).

In astronautics, medicine, psychology, wellness science, fitness science and sports practice such hardware-software systems as “Amsart”, “Valeoscan”, “Kantum-Pro”, “Istoki zdorovya” have gained acknowledgement (N.N. Ozhug, G.R. Rusinov, 2004; S.D. Runenko, 2007; V.A. Gorbunov, O.I. Demidenko, 2007). Use of the above listed systems allows to make timely assessment of sportsmen’s psychoemotional state and to control the possibility of providing rehabilitation means (G.Z. Karnaukhov, 2006; K.G. Korotkov, A.K. Korotkova, 2005–2008; E.M. Khekalov, 2004).

Use of such hardware-software systems as “ROFES” and “Colourpsychosomatic-techniques” is covered in scientific literature to a lesser extent (A.V. Karnyukhin, 2007; L.N. Sobchik, 2008).

In this research work experimental materials are presented regarding use of hardware-software systems such as “ROFES” (functional and emotional state assessment detector) and “Colourpsychosomatics” (CPS). These systems provide information not only about a sportsman’s emotional state at the moment of testing but also about a number of peculiarities of the current state which allows to determine risk exposed organs and organ systems and to substantiate the necessity of corrective sessions.

## OBJECTIVE OF THE RESEARCH

to determine functional state of the female sportsman who is specialized in two kinds of multiathlon: tram-



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poline and double mini trampoline; to find out initial symptoms of mental disadaptation at different stages of training practice before competitions.

## TASKS

1. To elaborate corrective techniques on the basis of the sportsman’s personal peculiarities and psychofunctional state.
2. To make a comparative analysis of medical and psychological check-up results using hardware-software system “ROFES” within the limits of corrective measures.
3. To elaborate guidelines for corrective sessions and rehabilitation measures.

## RESEARCH METHODS AND ARRANGEMENT

Research and corrective sessions were conducted in a laboratory within the limits of sports activity (since the year 2009 till present). The object of the research was a young promising female sportsman who within one year cycle participated in 16 and more important competitions.

According to the coach’s decision within the limits of some of the competitions the sportsman did competition program in two specializations – trampoline and mini trampoline.

For diagnosis we used the following checkup methods: observation, structured interview, diagnosis with ROFES technique and Colourpsychosomatic-

technique. Besides that, stable, professionally important qualities of the sportsman were determined such as motives of behaviour, style of attitude to the environment, spheres of interest and mindset. Two-stage method for personal traits investigation consists of the stage one within which norm-characteristic traits are determined and the stage two within which patho-characteristic traits are determined.

#### *Diagnosis includes several stages:*

**The first stage** – functional state of organs and organ systems was registered with ROFES to get evidences of clinical diagnoses; along with the somatic data we also got psycho-emotional portrait of personality and psychological characteristics such as:

- Tonus of the vegetative nervous system and emotional tonus;
- Adaptative potential;
- Functional state;
- Psycho-emotional status.

Level of functional state (FS) and adaptative indicator (AI) describe to what extent person's structures and his/her inner states such as physiological state, psychological state and degree of readiness to perform vital functions are balanced; these are assessed according to five-point grading scale (excellent, good, satisfactory, unsatisfactory, rehabilitation required).

Psychoemotional status indicates the state of body compensatory mechanisms.

Tonus of the vegetative nervous system and emotional tonus indicators provide psychological characteristics such as trophotropic or ergotropic mechanisms indicators (need for expanding energy or reconstitution of energy stores).

**The second stage** – on the basis of the obtained data and "Correction module" we made up an individual program of colourcorrection.

**The third stage** – taking an individual colourcorrection course on the basis of "Colourcorrection module".

**The fourth stage** – state of the surveyed sportsman was analyzed with ROFES technique before and after competitions, also it was analyzed how efficient the individual course of compensation by method of colourcorrection and record of pathological frequencies on magnetic carrier is.

Colourcorrection sessions were prescribed upon agreement with the coach, mostly within precompetition period, and were conducted 2 times a week in the presence of the coach and psychotherapist, the rest of the days on sportsman's own.

Precompetition training was based on six-day microcycles. Training sessions included performing

competition compositions 7–10 times, practicing elements and links for voluntary combinations. After practice on trampoline or mini trampoline, body conditioning and breathing exercises are obligatory. Two weeks before the competition started, "obligatory" and voluntary programs were performed in "competition" mode 7–10 times, body conditioning – in moderate load mode. After the competitions a lot of training time was dedicated to body conditioning and practicing elements of voluntary final program. At this period psychocorrective sessions and sessions of body functional state correction were conducted upon agreement with the sportsman and the coach.

## RESEARCH RESULTS AND THEIR DISCUSSION

The results of the conducted research are presented in the summary tables 1–3 in which the following information is given: level and type of competitions, principal indicators of psychosomatic state such as emotional tonus and tonus of the vegetative nervous system (VET), adaptative capacity indicator (AP), psychoemotional status (PES) and functional state (FS).

Basing on the data presented in the table it can be noted that dynamic of such indicators as functional state (FS) and adaptative capacity state (AP) which reflect to what extent person's structures and his/her inner states such as physiological state, psychological state and degree of readiness to perform vital functions are balanced, is strongly interrelated with psychoemotional status and state of body compensatory mechanisms.

The analysis of the results of the sportsman's participation in the competitions and of the dynamic of adaptative potential, functional state and psychoemotional status (tables 1–3) shows that when the sportsman had low adaptative potential (from 15 to 31%), she was not a leader in the competitions and was in stressed conditions like "emotional exhaustion" and low level pre-start readiness. Total adaptative potential registered with ROFES reached the average of 75% by the end of the cycle and exceeded the normal level of a healthy human being (50–60%).

It also should be noted that tonus of the vegetative nervous system and psychoemotional status are interrelated. When their levels are below norm the sportsman feels "strong emotional tension close to exhaustion phase and distress".

Besides, no interconnection was detected between adaptative potential and psychoemotional status, while when tonus of the vegetative nervous system was below norm, adaptative potential, on the contrary, was quite high (58%, 63%, 74%).

Table 1. Psychoemotional portrait of personality and psychological characteristics along with somatic data obtained in 2009

Competition level (time when it took place)	Date of registering the values before and after competitions	1	2	3	4	5
		Emotional tonus and tonus of the vegetative nervous system	Functional state	Adaptative potential	Psychoemotional status	Result of participa- tion in the competi- tion
April, 17–18, 2009 – Open city championship (Regional competi- tions)	15.04.2009 Before the competitions	+	+	42%	Relative equilibrium	Trampoline – 2 <sup>nd</sup> place
June, 6–7, 2009 – Regional competitions	15.06.2009 Before and after the competi- tions	!	–	31%	Body compensatory mecha- nisms under stress	Trampoline and dou- ble mini trampoline – 1 <sup>st</sup> place, 2 gold medals
July, 1–3, 2009 – All-Russian championship	03.07.2009 After the competitions	–	!	58%	Strong emotional tension (resistance phase, closer to exhaustion phase)	Trampoline – 7 <sup>th</sup> place
	31.07.2009 Training process	+	–	34%	Strong emotional tension (resistance phase, closer to exhaustion phase)	
	25.08.2009 Before the competitions	!!	+	48%	Relative equilibrium	
September, 8–12, 2009 – All- Russian Championship	26.09.2009 Before and after the competi- tions	–	+	52%	Strong emotional tension (resistance phase, closer to exhaustion phase)	Trampoline – 5 <sup>th</sup> place, double mini trampoline – 1 <sup>st</sup> place

Note: (–) – unsatisfactory functional state, (+) – satisfactory functional state, (!) – good functional state.

Emotional status and status of the vegetative nervous system: (!! – medium level closer to heightened, (!) – medium level, (+) – medium level closer to lowered, (–) – lowered level

## CONCLUSIONS

1. Within the limits of the research it was found out that precise planning of training load on the basis of adaptative potential values and psychoemotional status values registered with ROFES gains more importance during preparation for the All-Russian championship and European championship. Within the limits of training for high sports achievements, structuring training sessions, combined with Colourpsycho-somatic sessions, becomes more important than volume of physical load during the sessions.
2. Colourpsycho-somatic method and ROFES diagnostics method allow to assess degree of adaptative processes tension and functional and emotional states dynamic quickly and fully, as well as to determine the sportsman's physical load tolerance and level of readiness for competitions. These methods also allow to prescribe individual corrective programs of psychofunctional inter-vention.

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Table 2. Psychoemotional portrait of personality and psychological characteristics along with the somatic data obtained in 2010

Competition level (time when it took place)	Date of registering the values before and after competitions	1	2	3	4	5
		Emotional tonus and tonus of the vegetative nervous system	Functional state	Adaptative potential	Psychoemotional status	Result of participation in the competition
February, 8–11, 2010 – Championship of the Southern Federal District	05.02.2010 Before the competitions	–	–	15%	Distress (emotional exhaustion, pre-start readiness)	Trampoline – 6th place, double mini trampoline – 3 <sup>rd</sup> place
March, 1–6, 2010 – All- Russian Championship – Voronezh city	18.02.2010 After the competitions	–	–	34%	Distress (emotional exhaustion, pre-start readiness)	Double mini trampoline – 3 <sup>rd</sup> place
	07.03.2010 after the competi- tions	+	+	41%	Distress (emotional exhaustion)	
	26.03.2010 training process	!!	!	74%	Relative equilibrium	
(Hip and lower leg injury) intense corrective measures are taken	29.03.2010	+	!	72%	Relative equilibrium	
Intense corrective measures are taken	22.04.2010 Training process	–	+	50%	Body compensatory mechanisms under stress	
	24.04.2010 before the competitions	+	–	31%	Borderline state, closer to asthenia syndrome	
June, 5–6, 2010 – Regional competitions for Moska- lenko's prize (Moskalenko is an Olympic champion)	17.06.2010 before and after the competitions	+	+	46%	Body compensatory mechanisms under stress	Trampoline – 1 <sup>st</sup> place; Double mini trampoline- 1 <sup>st</sup> place
June, 27–29, 2010 All-Russian competitions EINOSAL	30.06.2010 r. before and after the competitions	+	–	31%	Strong emotional ten- sion (resistance phase, closer to exhaustion phase)	1 <sup>st</sup> place – double mini trampoline 2 <sup>nd</sup> place – trampoline, 1 <sup>st</sup> place – synchronized trampoline tumbling
June, 2–4, 2010 – Regional competitions in Novoros- siysk	5.07. 2010 after the competi- tions	+	+	50%	Relative equilibrium	Trampoline – 2 <sup>nd</sup> place
	12.07.2010 training process	–	+	62%	Relative equilibrium	
	04.08.2010 training process	–	+	57%	Body compensatory mechanisms under stress	
	19.08.2010 training process	+	+		Body compensatory mechanisms under stress	
	13.09.2010 before the competitions	!	!	65%	Relative equilibrium	
September, 25–26 – Open championship of Krasnodar city						1 <sup>st</sup> place – double mini trampoline
October, 5–10 – All-Russian championship in Ramen- skoye, Moscow region						2 <sup>nd</sup> place – double mini trampoline 7 <sup>th</sup> place – trampoline
	13.10.2010 before and after the competitions	–	+	61 %	Relative equilibrium	

Note: (–) – unsatisfactory functional state, (+) – satisfactory functional state, (!) – good functional state.  
Emotional status and status of the vegetative nervous system: (!! – medium level closer to heightened, (!) – medium level, (+) – medium level closer to lowered, (–) – lowered level

Table 2. Psychoemotional portrait of personality and psychological characteristics along with the somatic data obtained in 2010 (continued)

Competition level (time when it took place)	Date of registering the values before and after competitions	1	2	3	4	5
		Emotional tonus and tonus of the vegetative nervous system	Functional state	Adaptative potential	Psychoemotional status	Result of participation in the competition
October, 29–30 – Open championship of the specialized school of the Olympic reserve for children and youth No. 2						1 <sup>st</sup> place – trampoline 2 <sup>nd</sup> place – double mini trampoline
	04.11.2010 before and after the competitions	+	+	69%	Body compensa- tory mechanisms under stress (stressed condition, post-stress phase)	
November, 13–20, 2010 - World championship, Metz, France	24.11. 2010 before and after the competitions	–	+	53%	Strong emotional ten- sion (resistance phase, closer to exhaustion phase)	Double mini trampoline– 7 <sup>th</sup> place
December, 4, 2010 – Open regional competitions in Bryukhovetskaya stanitsa						Trampoline – 1 <sup>st</sup> place
December, 18 – Concluding Open championship of the specialized school of the Olympic reserve for children and youth No. 6						Trampoline – 1 <sup>st</sup> place
Training process and intense corrective measures	16.01.2011 before the competitions	+	!	75%	Relative equilibrium	
February, 2–3, 2010 – Championship of Krasnodar region						Double mini trampoline– 7 <sup>th</sup> place

Note: (–) – unsatisfactory functional state, (+) – satisfactory functional state, (!) – good functional state.

Emotional status and status of the vegetative nervous system: (!!) – medium level closer to heightened, (!) – medium level, (+) – medium level closer to lowered, (–) – lowered level

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Table 3. Psychoemotional portrait of personality and psychological characteristics along with the somatic data obtained in 2011

Competition level (time when it took place)	Date of registering the values before and after competitions	1	2	3	4	5
		Emotional tonus and tonus of the vegetative nervous system	Functional state	Adaptative potential	Psychoemotional status	Result of participation in the competition
Training process and intense corrective measures	13.02.2011	+	!	71%	Relative equilibrium	
March, 1–4, 2011 – competitions of the Southern Federal District (intense corrective measures)	Sick (intense corrective measures) 21.03.2011 before the competitions	–	–	32%	Distress (emotional exhaustion)	
March, 26, 2011 – City championship						Trampoline – 1 <sup>st</sup> place
Training process and intense corrective measures	27.03.2011 before and after the competitions	+	+	57%	Stressed condition, post-stress phase	
April, 3–7, 2011 – All-Russian championship	09.04.2011 after the competitions	medium	!	84%	Body compensatory mechanisms under stress (stressed condition, post-stress phase)	1 <sup>st</sup> place – double mini trampoline 3 <sup>rd</sup> place – trampoline 2 <sup>nd</sup> place in team total

Note: (–) – unsatisfactory functional state, (+) – satisfactory functional state, (!) – good functional state. Emotional status and status of the vegetative nervous system: (!! ) – medium level closer to heightened, (!) – medium level, (+) – medium level closer to lowered, (–) – lowered level

# in brief...

## MS-THERAPIE: VERZERRTE VORAUSWAHL

Interferonpräparate werden als Standardtherapie bei Multipler Sklerose (MS) eingesetzt. Forscher kamen nun zu dem Ergebnis, dass die Interferontherapie das Voranschreiten einer Behinderung nicht bremse.

*Originalpublikation:*  
Association Between Use of Interferon Beta and Progression of Disability in Patients With Relapsing-Remitting Multiple Sclerosis AFSANEH SHIRANI ET AL.; JAMA, doi:10.1001/jama.2012.7625; 2012

## NEUROENHANCEMENT: STROM BRINGT REAKTION

Forschern gelang es erstmals, in einem Lernexperiment mit Testpersonen die Reaktionszeit in einem Merkttest mittels transkranieller Wechselstromstimulation (tACS) deutlich zu verkürzen.

*Originalpublikation:*  
The Importance of Timing in Segregated Theta Phase-Coupling for Cognitive Performance RAFAEL POLANÍA ET AL.; Current Biology, doi: 10.1016/j.cub.2012.05.021; 2012

## KOGNITIONSPSYCHOLOGIE: STRIATUM BEI STRESS

Gestresste und nicht gestresste Personen nutzen unterschiedliche Hirnregionen und unterschiedliche Strategien beim Lernen. Zu diesem Ergebnis kam nun eine durch Kognitionspsychologen durchgeführte Studie.

*Originalpublikation:*  
Stress modulates the engagement of multiple memory systems in classification learning LARS SCHWABE ET AL.; Journal of Neuroscience, doi: 10.1523/JNEUROSCI.1484-12.2012; 2012