

RESEARCH ON THE EFFECTS OF THE ART OF LIVING ANTI-STRESS PROGRAM: THE POSSIBILITY OF THEIR CONTRIBUTION TO MANAGING STRESS IN THE SLOVENIAN ARMED FORCES

Abstract

Various armed forces come to the same conclusion: that stress management could be a key factor distinguishing winners from losers. Organizational, operational and combat stress management also plays a crucial role in the achievement of the efficiency of the Slovenian Armed Forces. A unique approach to this issue is offered by the Art of Living anti-stress programs created by one of the largest international non-governmental organisations in the world, the Art of Living Foundation, which are currently implemented in over 140 countries world-wide. Studies show that the Art of Living anti-stress programs have numerous positive psychological, psychosocially-rehabilitation, neurophysiologic, biochemical and biophysical effects, which may be directly relevant to operational, organizational and combat stress management of the armed forces. The paper focuses on the findings of certain foreign and Slovenian studies, including researches of the Art of Living anti-stress program's effectiveness in dealing with the consequences of combat stress on police officers in the U.S., its impacts on the *post traumatic* stress disorder on Australian war veterans, its effects on oxidative stress and biochemical indicators of stress in training of recruits of Police Academy in India, as well as its applicability as the anti-stress program in the Slovenian Police.

Key words

Stress, stress-management, anti-stress programs, breathing techniques, the Art of Living program.

Introduction

The ability to cope with stress, its management and elimination of its effects are becoming, considering the problems related to the consequences of today's life styles, artificially created environments and the resulting, in many ways aversive psycho-social environments, more and more important skills for an increasing number of people, especially for those social groups that are most exposed to stress. Among them are certainly also representatives of armed forces. For them these skills can in numerous cases prove to be of essential importance for their efficiency, and in some cases also for their survival. Different armed forces come to the same conclusions, i.e. that stress management is often a key factor distinguishing winners from losers (Naglič, 2008).

To achieve efficiency of the Slovenian armed forces, there are three important aspects of stress to be managed. The first one is organisational stress, i.e. stress that every work organisation faces and that relates to the ability of the Slovenian armed forces as employer to provide their employees adequate working conditions and favourable working environment. Risk factors in this context are related to tasks and demands that come with the employment in the armed forces. Compared to many other institutions, the demands are frequently quite high. Some examples are e.g. unfavourable working hours, longer working hours, night work and on-call service. The employment in the armed forces is also related to possibilities of transfer for the needs of the service, which often includes driving in remote places and thus longer absence from home, problems with child day care, fatigue and burnout as well as daily traffic risks. Transfers also mean changes of the work place, environment, tasks and work teams, and they require adapting to new circumstances, which is demanding by default (Resman, 2008).

Beside managing organizational stress, the Slovenian Armed Forces are facing operational stress at their missions at home and combat stress at their missions abroad. The fact is that combat stress, and perhaps also operative stress, requires significant efforts, i.e. exposure to extraordinary physical strains, cold, heat, dehydration, sleep deprivation, difficult living conditions, absence from home, changes of living environment, lack of privacy, isolation, different deprivations, insecurities, incapacity, lack of control, fear of diseases and injuries, facing with different traumatic events in combat with the enemy, contacts with wounded or dead civilians, soldiers, mines, different injuries, etc. Physical and psychological

stress that appears in this context may result in health damaging strains that influence psychological as well as physiological, oxidative, genotoxic and immunologic conditions of the members of armed forces.

Extensive and long-lasting excretion of stress hormones or mediators can cause severe disruptions or even damages of body organs, among others digestive system and cardiovascular and immunity systems. Thus also the susceptibility to infections and other diseases increases, such as autoimmune diseases and allergies. It can also cause eating and sleep disorders as well as anxieties and depressions (Erzar in Torkar, 2008). Acute and chronic extreme physical strains typically reduce the levels of natural killer cells, which are important for the control of immunity system. Due to oxidative stress related to such strains, DNA damages may occur. Strains reaching into human internal biological clock and the adaptability to the 24 hour day and night period may affect the circadian processes in the organism, which may influence the sleep and waking cycles, including the efficiency of sleep, latencies of putting to sleep, deep sleep, REM sleep, lengths of different sleep phases, duration of waking state during sleep, number of times of waking up at night, etc. Since the internal homeostasis of the organism is provided by the time harmonisation of individual systems, the derailing of individual circadian processes may affect other circadian processes, such as the cycle of body temperature oscillations, cortisol, melatonin excretion, as well as circadian rhythms of integral organic systems, such as immunity system, and thus the whole organism (Ihan, 2008).

Results of tests conducted so far by the representatives of the Ministry of Defence within the project investigating the influence of extreme strains and damages on immunity condition and disposition to infections performed by Ihan (2008) have shown different connections between psychological properties of participants in stress circumstances and individual physiological and health parameters, especially changes of hormone, electrophysiological and immunological parameters, as well as the necessity of methodical preventive measures against stress.

Research about recognition of fear and regulation of stress suffered by the participants of the Slovenian armed forces conducted by Erzar and Torkar (2008) confirms the hypotheses of the link between stress and other forms of psychical problems, such as depression, anxiety and disposition to shame and guilt. The authors also emphasise that in the future it would be sensible to spend enough time to prepare superiors to recognise and manage stress and fear, and they also emphasise high sensibility and exposure of newly employed and those with higher level of education.

In their research of the operations of the command structure in peace missions with cooperation of Slovenian armed forces between 2003 and 2008 Jelušič and Garbov (2008) establish that stress factors are present on all levels and that they are especially pronounced with subordinate soldiers. They also establish that care for subordinate soldiers is better organised, while the command structure is double burdened with the consequences of stress, due to their active experiences of stress factors as well as due to consequences of stress visible with subordinate soldiers. For this reason the command structure is often unable to cope with stress factors and alleviate the influence of stressors with subordinates. The authors recommend special training, especially for the commanding officers.

Results of the study investigating behaviour, responses and state of being of the Slovenian armed forces representatives in peaceful operations and at military missions from the aspects of stress and burnout, performed by Selič et al. (2008), show that the group of mission participants generally shows overall dissatisfaction, cynicism, machism and distrust as well as burnout as a consequence of extreme strains or damaged biological and psychosocial well-being. This may lead to absenteeism or abandoning of the profession or work. Based on the obtained results the authors define organizational atmosphere and make the conclusion that the group of participants at missions demands special attention.

In their research about anxiety, self-regulation and methods of coping with stress by the soldiers of the Slovenian armed forces Dolenc et al. (2008) state important differences among representatives of

different detachments. They also establish the inclination to connect several psychological aspects with the motor efficiency of soldiers.

With her analysis of preventive activity and treatment of post-traumatic stress disorder in the German army Naglič (2008) proposes that all representatives of the Slovenian armed forces should take part at preventive training and educational programs for managing psychical burdens.

An original approach to the stress management systems represents the Art of Living antistress programs, used all around the world for numerous populations, also for those with especially large exposure to stress. Researches about their effects show numerous positive neurophysiologic, biochemical, biophysical, psychological and psychosocial rehabilitation effects, among others also numerous above mentioned psychophysical and psychosocial consequences of stress appearing in the activities of the armed forces and in the performance of their tasks.

1 THE ART OF LIVING ANTISTRESS PROGRAMS

The Art of Living antistress programs are programs organised by The Art of Living Foundation, one of the largest international nongovernment organisations. It is a non-profitable educational and humanitarian foundation with a special consulting status in the Economic and Social Council of the United Nations. It cooperates in the official consulting alliance with the World Health Organisation for the development of the global health policy for the 21st century. It also cooperates with UNICEF.

One of key characteristics of the educational programs offered by the Foundation is giving practical knowledge, techniques and skills that help people cope with stress and stressful situations, remove their influences and handle more efficiently with different tasks and demands in daily life, while at the same time improving health and achieving better quality of life. So far more than 20 million people from more than 140 countries participated in their programs.

In Slovenia these programs are offered by the Institute for Strengthening of Human Values. They are available also for institutions such as the ministries of internal affairs, of law, education and sport, Slovenian Institute of Rehabilitation, and others.

1.1 Methodology of the Art of Living antistress programs

The Art of Living antistress programs are based on integral social interaction, group dynamics, special intrapersonal processes and exercises of self-awareness. They include learning and performing special breathing techniques. The bases of their methodology, summarized below, were presented in the fourth international conference of the World Health Organisation on health promotion (TAOLFHI, 1999). The methodology is based on the paradigm of the mind/body medicine which says that a person's emotional and psychological state directly influences the functioning of numerous processes in the person's body, immunity and endocrine systems, functioning of the brain as well as the ability of responding to different circumstances, thus also on the quality and length of life.

Psycho-neuroimmunology claims that with each emotion some chemical mediators or neuropeptides are connected. Positive emotions, such as joy, enthusiasm or love, induce the release of chemical mediators that have positive effects on the functioning of the immunity and endocrine systems as well as the brain and health of the person and thus also the efficient management of stress situations in life. On the other hand, negative emotions, such as fear, anger or sadness, induce the release of chemical substances that have negative effect on the functioning of the immunity and endocrine systems and the brain, which leads to lower immunity, weaker health and less effective management of different situations. Nevertheless, people never learn systematically to control their emotional or mental processes or how to re-shape unwanted psychical states (TAOLFHI, 1999).

For this purpose The Art of Living antistress programs offer methodical procedures, among others based also on the use of the connective function performed by the breath, during the mental activities

in a person, by taking into account the physical condition and situations of this person. Each emotion or the related thoughts release certain chemical substances in the body and also create a special rhythm or pattern of breathing. With each type of emotion the breathing pattern changes. When, for example, a person is frightened, the breathing becomes rapid and shallow. When, on the other hand, someone is satisfied, the breathing is light and calm. If, however, a person is depressed, the breathing becomes heavy.

The program teaches how to use breathing to positively re-shape physical state instead of allowing emotions to change the breathing and cause physiological changes that affect negatively the person's health and efficiency. Thus, we can take over active role in simultaneous functioning of our mental system, emotions and body. Only in this way a person can truly effectively use adequate cognitive states that help manage stress, different situations and interpersonal relations. For this reason the program also includes cognitive processes that equip individuals with practical stress management strategies that may also be used against numerous stressors that appear in different stress situations and demands in life.

Cognitive strategies offered by the Art of Living programs are based on empirical insight into subtle intrapersonal processes inside human body. They are directed towards internal locus of control, reduced anxiety, management of stress and its effects, achieving better personality strength, improvement of interpersonal relations, self-image and self-respect, increase of personal competence and to higher level of satisfaction with life (ZRCV, 1997).

During the program the participants also learn special physical exercises that increase physical strength, adaptability and immunity and have beneficial effect on the nervous system (AOLHI, 1999). In the first phase of the Art of Living antistress program, the beginner's course, the participants learn the basic knowledge, techniques and skills, usually followed by regular meetings that give them the opportunity to maintain and build-up the knowledge. There are also numerous advanced educational processes.

1.2 Use of the Art of Living antistress programs

The introduction of antistress programs includes a comprehensive list of socio-cultural and socio-economic areas. The programs include different sectors of society and adapt to different social groups. They are intended to the general population as well as groups exposed to additional stress or special position considering health, psycho-social or socio-economic situation.

Thus, special programs are intended among others to:

- police officers¹,
- war veterans²,
- people with posttraumatic stress disorder³ and depression disorders⁴,
- leading, managerial employees and other employees in different organisations⁵,
- prison inmates, juvenile delinquents and expert workers and other employees in prisons⁶,
- leading and managerial employees in prisons⁷,

¹ Metropolitan Police Department, Washington D. C., in the USA, in Slovenia for the Ministry of the Internal Affairs.

² In Australia for the Vietnam war veterans.

³ In Croatia, Bosnia, Kosovo, Israel, Sri Lanka, Afganista, Iraq and in some other crisis areas as well as numerous areas of natural disasters, e.e. after the earthquake in Kashmir, the tsunamis in India, Indonesia, Sri Lanka, in 2004 for more than 15,000 survivals in the SE Asia, after 9/11 and after the Katrina hurricane in the USA, in Slovenia in the Upper Soča River area.

⁴ E.g. at the National Institute of Mental Health and Neurosciences in Bangalore in India

⁵ For companies such as British Airways, American Express, City Bank, Exide Industries, Texas Instrument, Volvo, International Chemical Industries, Morgan Stanley, Rothwells System and others.

⁶ In 33 countries of the world, in the USA e.g. in Northeast Pre-release Center Cleveland, Barnstable County House of Corrections etc., in Slovenia for the Penalty Administration at the Ministry of Law.

- different expert workers, such as psychologists, social workers, educational workers, etc.⁸,
- people with different types of addictions⁹,
- patients with severe diseases, such as cancer¹⁰, multiple sclerosis¹¹, HIV/AIDS¹², etc.,
- students¹³ and others (TAOLFHI, 1999; ZRČV 1998 in 2000).

Beside the programs for adults also programs for children and adolescents are taught¹⁴.

2 RESEARCHES OF THE EFFECTS OF THE ART OF LIVING ANTISTRESS PROGRAMS

International research committee founded by The Art of Living Foundation for the evaluation of the Art of Living antistress programs and the researches of their effects keeps an international database of case studies recording important improvements or complete recoveries of numerous physical and psychical disorders. Among them there are cardiovascular diseases, diseases of respiratory, muscular, gastrointestinal, immunity, endocrine and nervous systems (TAOLFHI, 1999).

The positive effects of the Art of Living programs is also evidenced by extensive documentation consisting of medical and other reports from the health area. It relates to personal experiences of the doctors with patients practicing the programs and to their personal professional experiences (TAOLF, 1996 and 1997). It also documents numerous anecdotes about the experiences of the program participants from different social groups¹⁵ (Wittman, 1996; TAOLF, 1996 in 1997).

There have also been numerous scientific studies investigating different aspects of psychological, psychosocial, rehabilitation, neurophysiologic, biochemical and biophysical effects of the Art of Living antistress programs. The results of some of them are presented below, whereby the division into categories is only informative, since some researches included teachings of different aspects of the effects of these programs. Many of them may have direct importance for the consequences of operative and combat as well as organisational stress related to the functioning of the Slovenian armed forces, while some are only provided as information related to the achievement of better psycho-physical and psycho-social well being of individuals.

2.1 Psychological and psycho-social rehabilitation effects

2.1.1 Research of the program effects for the consequences of combat stress for the police officers of the Metropolitan Police Department, Washington County in the USA

The study performed by Paradigm Consulting Group (2003) investigated the efficiency of the Art of Living antistress program for the consequences of combat stress with police officers of the Metropolitan Police Department, Washington District, USA. The participants were selected by their superiors based on the detected management of the occupational or personal stress. Many had limited

⁷ In Slovenia financed by the European Commission

⁸ In Slovenia the program is included in the catalogue for educational workers, also a research on the effects of the program as antistress program for the workers of the Centre for Social Work Radovljica was conducted.

⁹ Numerous programs are active in Sweden, Norway, Finland, Denmark and in the Netherlands.

¹⁰ In the USA at High Desert Medical Oncology Center, Charlotte Maxwell Complementary Clinic, in India at All India Institute of Medical Sciences.

¹¹ In Slovenia through the Slovenian Institute of Rehabilitation.

¹² In South Africa, Botswana, India.

¹³ At Southeastern University in the USA the program is included in the University curricula, in Slovenia through the Student Organisation of the University of Ljubljana.

¹⁴ In Slovenia through Secondary School Student Organisation of Slovenia, some programs are co-financed by the Ministry of Education and Sport and the Municipality of Ljubljana, Municipality of Gorje and Bled and others.

¹⁵ In Slovenia the documents include mainly programs conducted for the police officers, administration and expert workers in prisons, prison inmates, university and secondary school students.

duties at work, which is why they received anti-depression drug therapy. Many of them showed symptoms of post-traumatic stress or grief.

The results showed statistically important improvement with all the selected indicators of the psycho-physical state of the participants. Important decrease of the perceived level of stress was observed, measured by psychological instrument Index of Clinical Stress, depression, measured by State-Trait Depression Inventory, as well as important improvement of the quality and quantity of sleep and decrease of digestive problems, frequent indicators of stress with police personnel, measured by adequate self-evaluation questionnaires, were noticed.

Based on the obtained results the researchers established that the program was well received and successful in the reduction of stress level and depression with this population and that it can be an efficient tool for dealing with stress related problems.

2.1.2 Evaluation of the program effectiveness as antistress program in the Slovenian armed forces

The Ministry of Internal Affairs conducted an evaluation of the effectiveness of the Art of Living antistress program for the Slovenian police officers (Višnikar and Meško, 2002; Višnikar and Turk, 2008). With special questionnaires the study evaluated the adequacy of the contents, the performance and applicability of the program for the work of police officers. The results indicated very appropriate contents and performance of the program and its usefulness for the police work. Based on very favourable evaluation results the authors establish that such form of antistress training is more than acceptable component of psycho-hygienic activity in the Slovenian police force. The European Health Protection Agency included this case among the cases of good practice.

2.1.3 Effects of the program in post-traumatic stress disorder

Different researches and clinical case studies show that the participation at the Art of Living antistress program has important effect on the reduction of anxiety, depression, insomnia, excessive agitation and reliving traumatic events for the persons suffering from the post-traumatic stress disorder.

A pilot study performed by Carter and Byne (2006) established that the participation in the Art of Living antistress program importantly decreases chronic symptoms of the post-traumatic stress disorder with Australian Vietnam war veterans, including important decrease of the levels of depression, measured by the Hamilton Rating Scale for Depression and Centre for Epidemiological Studies.

Brown and Gerbarg (2005) state that in their clinical practice the use of the Art of Living antistress techniques by more than 200 persons had positive influence on the alleviation of traumatic memories, emotions, sensations and physiological reactions. Most reported to be calmer, lighter, less worried, happier and more hopeful. The program also proved to be efficient when dealing with the mass trauma after the terrorist attack at World Trade Center on 9/11, when hundreds of New Yorkers were offered a free form of the Art of Living antistress program. Although science doubts the efficiency of conventional psychotherapy when dealing with mass trauma in the first few days after the disaster, considering the results of retrospective analyses, the program organisers as well as participants reported that the traumatic symptoms had decreased considerably already short time after the program.

Similar findings are reported by Descilo et al. (2006) in their experimental research, where they studied the effects of the Art of Living antistress techniques for the survivors after the tsunami disaster in the South East Asia in 2004, suffering from post-traumatic stress disorder. Compared to the control group that was not included in the program, the group of participants at the program showed considerably less symptoms of the post-traumatic stress disorder, depression, somatic symptoms, symptoms of social dysfunctionality, and their general health improved, according to the results by the civil version of the PTSD Checklist, the Beck Depression Inventory and the General Health

Questionnaire. The results remained the same throughout the period of five weeks, when the researchers were able to monitor the participants, and they expect this trend to continue.

2.1.4 Effects for depression disorders

Between 1996 and 2000 the National Institute of Mental Health and Neurosciences (N.I.M.H.A.N.S.) in Bangalore, India, conducted several studies, including different independent clinical and laboratory studies on neurophysiologic effects, therapeutic benefits and clinical applicability of the Art of Living antistress programs or the related techniques for depression patients. The studies were conducted by a group of multidisciplinary experts of N.I.M.H.A.N.S. (Meti et al, 1996; Naga Venkatesha Murthy et al, 1997 and 1998; Janakiramaiah et al, 1998 and 2000; Gangadhar et al, 1999).

They used different methods of checking the effects of the studied programs, among others measurements of neurophysiologic changes such as EEG of brain waves, chemograms, subjective reporting of patients on the effects of treatment, psychiatric evaluation and standard clinical psychological tests, such as Hamilton Rating Scale for Depression, Beck Depression Inventory, Clinical Global Impression, Subjective Global Impression, Comprehensive Psychopathology Rating Scale and video version Beck Depression Inventory.

Summary of main findings from the study according to Newman (2009):

1. Use of the Art of Living antistress program has proved to be highly efficient in the treatment of patients suffering from depression. The absent level of achieved remissions amounted to 68–73 percent. Recovery of patients suffering from all types of depressions studied was fairly rapid – considerable improvement was established already after three weeks. Favourable results lasted for the duration of the follow-up period of three months. Patients remained stable and asymptomatic. Patients who did not achieve remission used the techniques considerably less frequently than prescribed (Janakiramaiah et al., 1998; Naga Venkatesha Murthy et al., 1998).
2. This level of success in the depression treatment has been detected regardless of the level of depression, its duration, the quantity of stress in current life of the patient, as well as for both hospital and outpatient treatment (Naga Venkatesha Murthy et al., 1998).
3. Comparative study of drug treatment with antidepressives and electroconvulsive therapy with the Art of Living antistress techniques showed that the latter has the same efficiency as any other treatment (Janakiramaiah et al., 2000).
4. Several studies have reported that the use of the Art of Living techniques results in the desired biological effects of the brain and endocrine systems:
 - a) EEG pattern, called P300 ERP, is normally low with dysthymic patients (chronic mild form of depression lasting for more than two years) and melancholic depression. After one month of practicing the Art of Living techniques, the condition of the patients improved significantly. After three months their brain waves P300 were within normal values, and the patients were stable and non-depressive (Janakiramaiah et al., 1997).
 - b) Results show beneficial effect of the techniques on brain waves during sleep. Before the participants learned the Art of Living techniques, the studies showed distorted pattern of the dream phase. By using these techniques, the EEG pattern normalized. The improvement was noticeable in REM phases as well as in NREM phases (Meti et al., 1996).
 - c) Results show increased level of the plasma prolactin hormone in blood after the first performance of the Art of Living techniques. This hormone is considered decisive in the formation of the antistress reaction and may be one of the key factors in depression recovery (Janakiramaiah et al., 1998).

- d) It has been recorded that by practicing the Art of Living techniques the level of plasma cortisol related to the level of stress in the body lowers. Change appears after three weeks of practice, which shows the antistress effect of the techniques (Gangadhar et al., 1999). Dr. N. Janakiramaiah, Chairman of the Department of Psychiatry and Director of a research group at N.I.M.H.A.N.S. concluded that the Art of Living program and its techniques are clinically practicable and effective. When treating depression, they may become primary treatment for the dysthymic patients, and they may also be used for mild forms of the main depression disorders. Compared to other methods of treatment normally used for depression, the use of the Art of Living techniques is natural, with no side effects, and the results are visible in a short time. Further on, when patients are trained for their use, they can practice techniques on their own, which increases their personal autonomy.

2.1.5 Effect on the anxiety level, stress and psycho-physical well-being

In their research Kjellgren et al. (2007) investigated the effect of the Art of Living antistress programs on the level of psycho-physical well-being, anxiety, depression, stress and life optimism of healthy volunteers. In the test group included in the Art of Living program and in the control group that rested in armchairs during the program, they measured before and after the program the levels of anxiety and depression using the Hospital Anxiety Depression scale, the level of optimism using the Life Orientation test and the stress level and personal energy using the Stress and Energy test. The results showed that compared to the control group the participants in the experimental group had lower levels of anxiety, depression and stress and that their level of optimism increased. The measurement results obtained by psychological instrument correlated also with the subjective reports by the participants.

The participants of the Art of Living antistress program experienced the program as positive event bringing positive effects. Considering the obtained results the researchers concluded that with the participation in the program and implementation of the obtained knowledge, methods and techniques adult persons improved their psycho-physical well-being.

2.1.6 Psychosocial rehabilitation effects for prison inmates

In the research conducted by the University of Ljubljana we studied the influence of the Prison S.M.A.R.T. program and the Art of Living antistress program adapted to the population of prison inmates regarding their psycho-social condition and the level of mental distress (Trampuž, 2007). The research was carried out in male prisons in Bulgaria, where the Prison S.M.A.R.T program is included in the process of re-socialization of prison inmates.

The effects of the program were tested in the Salomon experimental plan of four groups, which allows the control of reactive or interactive measurement effects. The results obtained with the help of the Kent nonverbal scale of mental distress and the scale of emotional states according to Lamovc show important positive effect of the program on the tested psychological indicators that measured the level of mental distress, depression, satisfaction, aggression, indifference and positiveness of self-evaluation.

2.2 Neurophysiologic effects

The study conducted by Bhatia et al. (2003) investigated the effects of the Art of Living antistress program on the electroencephalogram (EEG) for regular practitioners of the program techniques compared to a control group of doctors and medical researchers who did not practice the techniques. With the group that practiced the techniques important increase of beta activity at the temples and in the central part of the brain was detected compared to the control group. The researchers interpreted this result as increased mental focus for the technique practitioners. As an interesting point they emphasised that the practitioners of the Art of Living antistress techniques achieved this result compared to the group where the nature of work itself demands high level of development and everyday use of these abilities. The EEG functioning was studied also during the practice of the Art of

Living antistress techniques. This study showed increased alpha activities with the persistence of beta activities, which was explained by the investigators as relaxation state with simultaneously increased level of alertness.

2.3 Biochemical and biophysical effects

2.3.1 Effects on stress hormone cortisol

Several studies have shown important decrease of the level of blood cortisol, one of the stress hormones, while practicing the Art of Living antistress techniques (IRC, 2009). In one of the researches the levels of blood cortisol for those practicing the Art of Living antistress techniques was compared with these levels of the beginners during their first performance. The beginners were also measured before their first practice, i.e. during listening to classical music. With the latter group the decrease of cortisol was significantly larger during the performance of the Art of Living techniques than during the listening to classical music, which shows that these techniques result in better relaxation. Regular practices generally bring importantly lower level of cortisol in blood compared to the beginners, which shows smaller level of the influence of stress in everyday life. Important difference in lower levels of the cortisol serum considering the results of measurements during the technique practice and after it between beginners and regular practitioners shows that regular practice of the Art of Living techniques gradually develops better relaxation and resistance to stress.

2.3.2 Effects on antioxidant enzymes, genes and blood lactate

There are several studies that have investigated the effects of the Art of Living antistress program on the oxidative stress in human body:

Study of biochemical stress indicators conducted by Sharma et al. (2003) investigated the basic levels of the main antioxidants – superoxide dismutase, catalase and glutathione as well as the level of lactates in blood. Antioxidants protect us against damage caused in the body by free radicals, and the level of lactates is the biochemical stress indicator. The study included healthy men who underwent very stressful professional trainings, i.e. recruit training of the New Delhi police academy in India. The experimental group used the Art of Living antistress techniques for five months, while the comparative group did not. After this period the group that used the techniques showed importantly higher production of antioxidants and importantly lower level of blood lactate compared to the control group. The study shows that regular practicing of the Art of Living antistress techniques leads to better antioxidative defence and better resistance against stress in everyday life.

In one of the studies the researchers compared genetic profiles related to oxidative stress for the users of the Art of Living antistress techniques compared to the participants of the control group who used no stress management techniques (Sharma et al, 2008). The studied parameters were antioxidant enzymes and genes included in the oxidative stress, DNA damages, cell cycle control, ageing and apoptosis (process of programmed cell death that allows control over the number of cells and removes cells threatening the survival of the organism). Practitioners of the Art of Living antistress techniques showed better antioxidative status regarding enzyme activity as well as regarding the RNA levels, as well as increased genetic expression of specific antioxidant systems. This was followed also by better regulation of stress and better immunity status based on extended life cycle of lymphocytes, correlated with increased expression of antiapoptotic genes and pro-life genes of these participants. The study brings the first evidence showing that the Art of Living antistress techniques may affect different physiological systems and processes, such as immunity system, ageing processes, cell death and stress regulation through changes in the gene regulation.

2.3.3 Influence on the number of natural killer cells

In the research conducted at the All India Institute of Medical Sciences in New Delhi, researchers investigated the influence of the Art of Living antistress program on the number of natural killer cells,

i.e. cells controlling immunity system and destroying tumour and infected cells (IRC, 2009). Their number was measured in peripheral blood in three groups: practitioners of the Art of Living antistress techniques, control group not performing these techniques and a group of cancer patients in remission. The number of natural killer cells was considerably higher in the group of practitioners compared to the other two groups. In further research the group of cancer patients in remission learned the Art of Living techniques and after 3 to 6 months of regular practice important increase of the number of these cells occurred. This is especially promising for the people who have recovered from cancer, as they have lower than normal level of natural killer cells. It may also be assumed that the natural killer cells are very important for the defence of the body against recurrent cancer diseases.

2.3.4 Influence on blood cholesterol

In the research that investigated the level of cholesterol in the blood of the participants of the Art of Living antistress program before the program and after 7 and 45 days of regular practicing of the learned antistress techniques, the researchers found out important decrease of the total cholesterol and the harmful LDL cholesterol as well as the increase of the useful HDL cholesterol (IRC, 2009). Considering these results it was concluded that the use of the Art of Living antistress techniques help improve the cholesterol values and that regular practicing is effective in the prevention of hypertension (high blood pressure) as well as coronary heart diseases.

2.3.5 Influence on biophysical indicators of the Gas Discharge Visualisation (GDV) technique

At the University of Ljubljana a research investigating experiences and biophysical consequences of the Art of Living programs on their participants was conducted (Trampuž et al, 1999), including the total of three studies. The first one studied the influence of the beginner's course of the Art of Living program, and the second the influence of further regular meetings. The effects were tested by experimental plan using control group. The third study compared the characteristics of the group of people that participated at the Art of Living antistress program and the group that did not. In order to measure in effects of the program, apart from self-evaluation scales for the evaluation of the physical and psychical state, mood and the level of fatigue, also biophysical indicators were used, obtained by the GDV technique and adequate computer equipment. Change of the most important GDV parameters and results of all self-evaluation scales confirmed positive effects of the program on the psycho-physical state, mood and the level of fatigue in the program participants.

To achieve better efficiency of the Slovenian armed forces, it is very important to introduce as effective ways of managing operative and combat as well as organisational stress as possible. The urgency of systematic preventive measures against stress and the need for additional treatment of specific structures in the Slovenian armed forces are evidenced from numerous studies of Slovenian experts who have studied these aspects in the Slovenian armed forces (Ihan, 2008; Erzar and Torkar, 2008; Jelušič and Garb, 2008; Selič et al, 2008; Dolenc et al, 2008; Naglič, 2008).

Conclusions

The Art of Living antistress programs are based on unique approach taking into account special processes of social interactions, practical cognitive strategies of stress management and the use of breath as a link between human mental state and the situations they face. Thus, subjective reports as results of the researches investigating the effects of these programs, conducted so far, show numerous positive effects on different aspects of psycho-physical and psycho-social conditions of the participants, including psychological, psycho-social rehabilitation, neurophysiologic, biochemical and biophysical effects. Among others they show:

- positive effect of the program in reducing the consequences of combat stress and symptoms of post-traumatic stress disorder, including different psychical and psychosomatic problems as well as social disfunctionality,
- large success rate in the treatment of depressive and anxiety disorders as well as the related psychological, neurophysiologic and biochemical changes,

- lowering of the levels of stress hormones or biochemical indicators of stress in the body, such as cortisol hormone and blood lactate,
- improvement of the body's immunity system, including the increase of the number of natural killer cells and the increase of the life cycle of lymphocytes,
- reduction of oxidation stress in the body and increase of antioxidative protection as well as the related basic level of the main antioxidants or antioxidant enzymes,
- positive changes in genetic regulation of different physiological systems, such as immunity system and ageing processes, cell death and stress regulation,
- positive neurophysiologic effects measured by EEG, showing increased mental focus and attention as well as simultaneous relaxation state,
- positive effect on the sleep and waking cycles as well as better quality of sleep, including positive effects on EEG pattern in REM and NREM sleep states,
- reduction of the total and harmful LDL cholesterol and increase of the useful HDL cholesterol,
- positive influence on the person's own psychophysical and general health condition, including reduced levels of mental distress, fatigue, lethargy, aggressiveness, and higher levels of satisfaction, better mood, more positive self evaluation and better life optimism.

There are also some additional beneficial characteristics of the program. The method is inexpensive, allows wide application rate, is non-invasive, simple to learn and use. It uses the integral approach and is useful in preventive as well as sanative sense. Besides, it helps individuals to take more active role in the management of their psychophysical state and circumstances they face.

Adequacy of the contents and presentation of the Art of Living antistress program and its applicability for the police work have also been very positively evaluated with relevance for the Slovenian police force.

Many effects of the program are directly relevant for the treatment of the consequences of operative as well as combat or organizational stress related to the missions of the Slovenian Armed Forces and show considerable possibilities of positive contribution to the stress management system in the Slovenian Armed Forces. Effective stress management system is especially important for the institution that has frequently higher demands to its representatives than other institutions and expects them to be constantly ready to carry out the entrusted tasks.

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