RESILIENCE AS THE LEADER’S COMPETENCY

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Abstract

Resilience was described as one of the key competency when preparing military students in the Czech Republic for their future career in the army. This article deals with stress and stress resilience as one of the identified military commander’s competencies.

First part of the article analysis the current methods commonly used in the army in the Czech Republic and outside, as well as new methods of the HearthMath Institute. It is a US-based organization dealing with stress research and education for over 20 years. The Institute investigates and cooperates with soldiers, military veterans, private entities and schools.

Main objective of my research was to analyze different stress resilience methods that can be used at the University of Defence and describe results from testing sessions with the military students. In order to train military students, it was necessary to combine several research methods to be able to reveal the stress profile of an individual that can outline the possibilities of training according to the current state of the person.

Second part of the article describes research itself and research outcomes. Object of investigation was a group of military students and the data collection was carried out during the winter training course for randomly selected students. During the course, it was applied a series of chosen psycho-tests, physical tests and throughout the course their heart rate was measured during activities and also during sleep.

Final part of this article brings concrete examples of research results. Given the complexity of research and the number of measured values, I have interpreted the results of research using case reports. Each tested person needs to be approached individually and results need to be interpreted specifically. Described outcomes bring possibilities of using the diagnostics for the military environment.

Keywords: Stress, Stress Resilience, Strain, HeartMath, Diagnostics, Competency, Leader.

1 INTRODUCTION

Stress can be described as a state of the living organism, when this organism is exposed to extraordinary conditions (stressors). Its subsequent defence responses aim to maintain homeostasis and prevent damage or death. Stress can be characterized as: "Exceeding the critical values of the external action that leads to destruction or damage to the function and is referred to as the overload of the loaded system." [1]

Stress may not always be negative. We distinguish eustress or positive load that in reasonable degree, stimulate individuals to higher or better performance. Stress can motive an individual. Conversely, distress is an excessive load that can harm the individual and cause disease.

We distinguish between mental and physical reactions in individuals who find themselves in a stressful situation. Psychological reactions include, for example, efforts to adapt to the situation, anxiety or even depression. Typical physical manifestations include high heart rate, sweating, redness or headache. The brain induces physiological responses in the body to allow short-term activation of reserves and to deal with stress. In the case of a stress response, the brain stimulates the adrenal gland to release adrenaline into the blood. Stress hormones such as adrenaline or adrenocorticotropic affect the activity of most organs in the body. Stress also affects cardiac activity and increases blood pressure.

Many scientists believe that stress is caused by the perception of events, not by the events themselves. HeartMath organisation founded in the USA, which is mainly focused on stress research and education, has discovered that it is our emotional responses to our perceptions of events that cause much of our unhealthful stress levels. Coherence, or emotional, mental, physical and spiritual components, plays an important role in stress research. As reported by a team of authors from the HeartMath Institution: "Coherence, an optimal physiological state, is an essential key to building resilience, and a state that can be self-created using the specific tools." [2] Coherence helps us to accumulate energy, not to waste it unnecessarily.
Coherence is associated with stress resilience. It is the ability to prepare for a stressful situation, recover and adapt to stress, challenge. Fig. 1. The ability to work with and adapt to stress, or to acquire stress reduction techniques, is important for coherence, physical, mental, emotional and spiritual health. When a person is in a coherent state, neural signals send signals to areas of the brain that are responsible for decision making, or even creativity. This is related to the ability to control the heart and heart rate, which is controlled by our emotions.

Systematic and quality training will allow a person to minimize stressful situations. Furthermore, control the body in such a way that it limits the negative effects of stress through conscious methods applied at a given moment or in a given situation. We are unable to influence the events themselves, but we are able to influence our reactions to them.

2 STRESS RESILIENCE METHODS

There are many ways how to work with stress and how to eliminate the negative effects of stress on the human body. At the University of Defense, a military training model that is currently being applied, in which a number of institutions and associates work together. The model focuses on the application of physical training to the real environment of a military unit and the ability to conduct stress both physically and mentally. Decision-making abilities are also being monitored, all in the stress and rest phase. The military model is applied in the form of a course and includes various physical activities and psychological diagnosis in stress. Heart rate is also measured.

Resilience is a combination of what we inherit, upbringing and training. The aim of the training model is therefore to simulate the exercise conditions using psycho-tests and physical tests, to find out the stress profile of the person and to train him / her. To be able to detect stress resilience and calmness, model is using different combined method.

Physical training at the University includes various exercises such as close combat, first aid, overcoming obstacles, the Ruffier test, and more.

Apart from psycho-tests and physical tests, pulse rate measurements, such as Team Polar System is used to measure stress profile. Individuals have sensors attached to the body throughout the day. System measures the individual who can be in different mental or physical condition, in decision-making situations, etc., and within a few days. The device read the body of an individual even during sleep. It also measures the morning heart rate, which is the most stable. It shows the adaptation of the organism to stress. These changes show how the organism is coping with the stress. Resting heart rate varies with individuals, taking into account the age, lifestyle, health and condition of the individual. For an adult, normal heart rate may be any value between 60 and 100 beats per minute. Usually it works in the way...
that the healthier and better the physical condition, the slower rate. Changes in heart rate, more precisely its fluctuation above 10%, indicate a disproportionate burden, disease, lack of regeneration, etc. Heart rate responds very quickly to changes in the load of the body, so it is a reliable variable for load assessment.

As I mentioned above, another area, how to measure a stress is psycho-tests. Military model at the University of Defence use them too. The tests that students go through at the university are different, depending on what needs to be determined and what the results should serve. Most often, MBTI tests, Numerical rectangle, Attention test d2, SPARO, Decision making under limited time and more are used.

The heartmath institute that works today with the military, private companies and schools uses Emwave technology for stress measurement. It's a patented stress research technology. It helps to train a state of coherence, a state where the activity of the heart, brain, and autonomic nervous system is synchronized. It has been shown that this condition has many mental, emotional and physical benefits. Technology works as an advanced heart rate monitor that can measure fine changes in heart rhythms. This type of measurement is known as heart rate variability or HRV analysis. HRV analysis is a noninvasive measurement that reflects the interaction of the heart and brain and the dynamics of the autonomic nervous system, which is particularly sensitive to changes in emotional state. [4] This method is also commonly used in the CZ army, using different measurement system.

Another methods used for stress measurement from HRV analysis, is breathing exercises. These are specific methods that focus on proper breathing and positive feelings. It is possible to evoke emotional and mental balance in a very short time, it is said that two minutes is enough. Another method is sleep as one of the most important methods of energy recovery. The basis for energy recovery is deep and undisturbed sleep. A trained person can get as much energy out of 4 hours of sleep as untrained in 5 hours. [5]

Energy depletion to renewal map is also used to identify areas associated with both negative and positive feelings. We lose the most energy by depleting the internal reserves of the emotional dimension, such as frustration, anger, anxiety. The hormones produced by these feelings can remain and act in the body for a long time, preventing the ability to concentrate, feel good and sleep well. An example of such a map is shown below. Fig. 2.

**Figure 2. Energy depletion to renewal grid. Source: [6]**
3 METHODOLOGY

The aim of the research was to analyze different stress resilience methods that can be used at the University of Defence and display stress profile of the individual. The object of investigation was a group of military students studying the Commander of the Reconnaissance Unit. A group of students of this discipline have been selected deliberately because this field is aimed at preparing key personnel of the Czech Army, a commander competent to lead the unit and make decisions. These students should have the knowledge, personality and skill for the career development of the commander and be able to lead the units in normal and stressful situations.

The data collection was carried out during the winter training course for ten randomly selected students in the specific above mentioned study field. During the course, students were subjected to permanent physical stress, a series of psycho-tests and throughout the course they wore Polar Team 2 sensor that measured their heart rate during their activities and also during sleep. During the course, participants are reduced to sleep and food.

To be able to display stress resilience and ability to work with a load, for this research we combined physical testing with two psycho-tests and pulse rate measurements. According to Colonel doc. Ing. Mgr. David Ullrich, Ph.D., MBA [7,8] , who participates in the training, the true self of the individual is possible to see after the second to third day of stress training. It is then possible to see how one will react in a crisis without pretense.

Psycho-tests used during this research was test Decision making under limited time. Test determines performance in stress, tests focused on perception, concentration, decision-making speed, and resistance to interference. Another one is called Numerical rectangle that determines the condition and quality of the nervous system, the degree of concentration, monitors attention and concentration in limited time. [9] Students did these tests twice. There were four days between the first and the second test administration to reflect changes. It is assumed that each should improve the quality and quantity of the test by up to 10%. However, under load conditions, this factor is minimized.

Research methods used in the work included literary research, analysis of current methods, method of observation was a purposeful, planned and systematic monitoring of military students during the research. The comparison method was used to evaluate the measured data and to find differences and similarities. The analogy was based on the comparison method. It is a search for an analogy of characters in different subjects. Evaluation of the system of tests (psycho-tests and physical tests) and classification of measured heart rate results by the Team Polar 2 system.

The limit of research may be a limited number of students chosen, as well as a combination of chosen research methods.

4 RESEARCH OUTCOMES

By combining methods of psycho-diagnostics and physical tests, it was possible to see how students cope with the burden of decision making and how they respond to stressful situations. Based on the results, it was possible to evaluate who has the ability to adapt to the load gradually and improve performance, and who, for example, is able to perform well for a short time and adapt, but after a prolonged period of stress and exhaustion, results deteriorate and the burden prevails.

For the test subjects, the quality and quantity of the individual's results should be increased during the repeated testing up to ten percent. However, due to load and fatigue, this effect is minimized. If a person achieves better results and increases quality and quantity of results even in stress, we talk about the potential and ability of adaptation - see below in sub-section.

Given the complexity of research and the number of measured values, I have interpreted the results of research using case reports. Each tested person needs to be approached individually and results need to be interpreted specifically.

4.1 Case reports - examples

As an example, I present two course participants. The results of participant number eight revealed that the individual had very good results in psycho-diagnostics, but almost constant and not improving in the heart rate. If this student went through psycho-tests only, we could assume that this participant is one of those that consider stress as motivator. It would seem that this person is individual who is able to deal with stressful and challenging situations. Heart rate, however, has shown that an individual is
able to deliver good and quality performance only for a certain period of time. If it is exposed to stressful situations in the long term, it is likely that over time exhaustion, psychosomatic problems, illnesses would appear, number 1 is constant and not improving at all during the testing period.

Another case is participant number nine. It turned out that this person will be able to make decisions and concentrate even if the person is tired or under stress. The tested person has reduced the number of mistakes in psycho-tests and has increased the number of correct answers. Heart rate has shown an improvement to the maximum possible degree (from 2 to 3). The student has demonstrated the ability to cope with stress. Based on the results, we can believe that stress in this case is a challenge and motivates to a better performance, also for a longer period of time.

The examples above outline what information can be collected about individuals and which are important for determining further training or development. It is always necessary to combine multiple methods to ensure that research is as accurate and valid as much as possible. It is also important to evaluate these results one by one and approach all tested people individually.

Some conclusions from many years of research conducted in the US suggest that 60% - 80% of general practitioner visits are related to stress, only 3% get help.

Figure 3. Examples of research results – final summary. Source: [9]
A study of 1,623 patients who had a heart attack found that when the subjects got angry during emotional conflicts, their risk of subsequent heart attacks was more than double that of those who remained calm.

A study of 1,200 people in poor health showed that those who learned to change unhealthy mental and emotional attitudes through self-regulatory training were more than four times more likely to be alive 13 years later than comparable control group.

Positive emotions are a reliable predictor of better health, even for those without food or shelter, while negative emotions are a reliable predictor of worse health, even if basic needs such as food, shelter and safety are met. [10]

5 CONCLUSION

The research has tested method that can outline a person’s stress profile. In the military, this research has the potential for training and development of future military students.

It always depends on the goal of the research and the combination of the methods. One research method should never be used. The more types of testing we choose, the more accurate the results will be. Described case studies outlined what information we can get about the individual.

Appropriate training is crucial for the development of future soldiers and these methods may help to determine current status of the person which can help in creation of development programmes for them and shorten training in general.

The pivotal aspect of human survival and the useful handling of the challenging situations and situations of crisis related to the limit load is, as described by Pokorny, Pindes, Sieger, the human mind. From it, there are aspects such as mental state or mental resilience, as well as mental competence for meaningful decision making and action. [11, 12]

It is therefore the decision of each individual, not only when speaking about soldiers, to understand the stressors in our lives that can help to learn effective ways to reduce stress, increase energy and build stress resistance that can also guarantee longer life.

REFERENCES