

STUDY ON THE PERCEPTION OF CIVILIANS IN THE LIMITED SITUATION OF FORCED DISPLACEMENT IN THE COLD CLIMATE ENVIRONMENT

Răducu POPESCU

Associate Professor, Ovidius University of Constanța
raducu.popescu22@gmail.com

Abstract. *The present study aimed to make a diagnosis among the civilian population regarding the perception of confrontation with a limited situation represented by the possibility of an armed conflict in which the need to move in a safe area, far from the horrors of the war, is achieved in hostile weather conditions. Refugees are some of the most vulnerable people in the world, many have suffered on the way to a safer place, violence, losses and hunger, but in winter it beats relocated families are facing significant risks for their health. Providing by this study that the perception of civil and incompletely informed civilian persons regarding the movement, transport of weights and physical effort at low temperatures and unfavorable weather conditions can be an important factor that can be speculated. The study was conducted on a sample of 107 subjects, university customers, bachelor's degree. Before carrying out and applying the questionnaire, discussions were held with the study participants. The study method used was the questionnaire. The centralization of the results leads to the need to establish well-defined and realistic objectives, correlated with the real level of theoretical knowledge and physical capacities of the civilian population. The study shows a real challenge in terms of structuring a civilian training plan. The level of information on the risks that appear with the exposure to low temperatures over a longer period of time is minimal, the perception of the majority of the study being in a small correlation with the real capacities to bear low temperatures to carry moderate weights or to move.*

Keywords: *civil; movement; physical effort; weather conditions.*

Introduction

Conflicts or strategic activities in cold weather, include military operations affected by snow, ice, thaw or cold conditions, both on the ground, in the air and on the sea. From a historical point of view, most such operations were in winter in the northern hemisphere. They have appeared where the snow, ice and cold are present in the cold season or throughout the year. Sometimes the cold or thaw were a decisive factor in the failure of a military campaign, such as the French invasion of Russia in 1812, the Soviet invasion of Finland in 1939 (Rehman 2016) and the German invasion of Russia. The Soviet Union during World War II. In 1242, the Teutonic order lost the battle on the ice on Lake Peipus in front of Novgorod. In 1520, the decisive battle of Bogesund between Sweden and Denmark took place on the ice of Lake Åsunden (David 1996). In 1643 or 1644, Prince Rupert made a wrong attack on the parliamentary fortress of Aylesbury England (Peter 1974). Carol X Gustav of Sweden led his army over the ice of frozen lakes to besiege Copenhagen. The war ended with the Treaty of Roskilde, a very favorable treaty to the Swedes (Herman 1992). During the Great War of the North, the Swedish King Carol XII started invading Moscow, but was eventually defeated in the battle of Poltava, after being weakened by the cold weather and the tactics (Stewart 2005). The Russian invasion of Finland during the Winter War showed the power of asymmetric warfare on the Finnish side, where small units were able to cut the road-bound Soviet invading troops into segments, like firewood, and vanquish each segment. The small units arrived silently on skis or with light artillery pulled by reindeer over frozen, untracked terrain, using winter conditions as an advantage. Although the Soviet Union gained territory from the Finns, it was at the cost of 200,000 fatalities against 25,000 on the Finnish side, (Rehman 2016). Roadway and landing zones require heavy equipment, which is more

fatiguing to operate in the cold and necessary to protect from freezing. Snowstorms require cleanup and spring thaw requires management of thawed soil. Landing zones require stabilization of dust and snow to avoid blinding helicopter pilots. The US Army has cold-weather adaptive kits for providing water and electrical utilities (Army 2017).

Anyone who spends a lot of time in cold weather can get hypothermia. You can also get it from being cold and wet, or if you are in very cold water for too long. Babies, elderly people, and people with heart disease are especially at risk. As we age, it becomes harder to maintain a normal body temperature. Because elderly people seem to be relatively insensitive to moderately cold conditions, they can get hypothermia. Physical activity in winter has several ways to maintain body temperature in front of the strong cold. Major problems occur by increasing the intensity of physical activity in cold environment, or as a result of increased heat loss by expiration. The speed and direction that the wind has in contact with the surface of the body, of the penetration through the wrongly chosen clothes, have a major contribution to shortening the exposure time and implicitly to shortening the distances traveled. The tremor can generate heat at a speed of 10 to 15 kJ/min, but affects the capacity for effort, while the use of the resulting glycogen speeds the appearance of fatigue and mental confusion. Studies look like in men, a combination of moderate physical exercise and facial cooling induces a substantial fat loss over a period of 1 to 2 weeks, with an associated ketonuria, proteinuria and body mass increase (Shephard 1985). Soviet Army doctrine gave them the responsibility to establish build and maintain routes, including water crossings, build and destroy obstacles that require special equipment, construct and maintain airfields, and to build shelter for personnel. Operations that didn't require special equipment were left to other troops (Armstrong 2014). The *Taschenbuch* describes a variety of ways to employ local resources to create roads, shelters and fortifications (Barracks 2001).

Refugees are some of the most vulnerable people in the world, many have suffered on the way to a safer place, violence, losses and hunger, but in winter it beats relocated families are facing significant risks for their health.

The huge numbers of people arriving at the same time as winter is raising fears of a new humanitarian crisis within Europe's borders. Cold weather is coming to Europe at greater speed than its leadership's ability to make critical decisions. A summit of EU and Balkan states last week agreed some measures for extra policing and shelter for 100,000 people (Borger, et al. 2015).

But an estimated 700,000 refugees and migrants, have arrived in Europe this year along unofficial and dangerous land and sea routes, from Syria, Eritrea, Afghanistan, Iraq, north Africa and beyond. Tens of thousands, including the very young and the very old, find themselves trapped in the open as the skies darken and the first night frosts take hold (Borger, et al. 2015). Hypothermia, pneumonia and opportunistic diseases are the main threats now, along with the growing desperation of refugees trying to save the lives of their families.

The movement of unprepared persons in unfriendly meteorological conditions in which the strong wind and mainly the air temperature is low, is a serious risk factor. The stress caused by leaving the house and a large part of the accumulated goods is an extremely stressful factor, to which if added to long distances at low temperatures, below 100⁰ C, can cause serious disorders and even losses of human life. In the case of elderly people who are more likely to become hypothermic and who simply do not notice the decrease in body temperature, the category can be considered with the highest risk. The 10-20 minutes from the beginning of a trip in which a large part of it can be spent walking or standing waiting for a bus or train in cold can tilt the balance and trigger a heart attack, it is important to end before to go out, not to start freely made and then react to the cold sensation later. Early morning is the most dangerous time because of natural daily rhythms, so prepare for the winter shuttle (www.coolantarctica.com 2018).

In the case of a military invasion or a conflict that puts the civilian population in the situation of leaving the domicile and moving into the cold environment to save their lives, the distance that civilians can travel varies very much. Thus, in the case of a temperature with an average value below -10°C the distance traveled represents maximum one third of the distance that civilians can cover under bearable weather conditions. In the case of traveling on a road covered with soft snow at a temperature of the air below 0°C , in which the snowfall alternates with the melted snow distance that civilians can cover is about 1.2 km/h. Armed confrontations bring physical and mental challenges that civilians must overcome in their attempt to save their lives.

The US Army groups cold temperatures using categories. The temperature categories are (with quoted summaries): considera ca: *Wet cold* – From (4°C to -6°C). Wet-cold conditions occur when wet snow and rain often accompany cold conditions. A wet-cold environment is more dangerous to troops and equipment than a dry-cold environment because the ground becomes slushy and muddy and clothing and equipment becomes perpetually wet and damp. Under wet-cold conditions, the ground alternates between freezing and thawing as the temperatures fluctuate above and below the freezing point. As temperatures warm, heavy equipment can sink into the softening mud; then as temperatures turn colder, the equipment becomes immobilized in frozen ground. This makes planning equipment recovery operations problematic (Army 2017). Under dry-cold and intense-cold temperatures, from $+19^{\circ}\text{F}$ (-7°C) to -25°F (-32°C), operations become more difficult (figure 1-1). At the warmer end of this range, lack of winterization results in only a slight loss of operating efficiency (Army 2017). Proper training prevents many failures of materiel and injuries to operators. Nevertheless, non-acclimated troops usually show signs of having difficulty at temperatures above -10°F (-23°C). Planning for Cold Weather 9 February 2017 TM 4-33.31 1-3 1-10. When temperatures drop below -25°F (-32°C), operations become extreme. At temperatures nearing -40°F (-40°C) and lower, operations become hazardous, requiring the maximum efforts of well-trained personnel to perform even the simplest tasks, even with fully winterized materiel (Army 2017). Temperate weather (a nominal temperature that is above and outside the cold weather categories). Wet-cold: (4°C to -6°C). Dry-cold: (-7°C to -20°C). Intense-cold: (-20°C to -32°C). Extreme-cold: (-32°C to -40°C). λ Hazardous-cold: (-40°C) and below (Army 2017).

Studies conducted on a representative sample show that an experienced infantrymen performed a simulated military mission (SMM) of 21 hours a day in a middle mountain environment, with 27 kg weighing equipment and 43 kg during the marches (Grenier, et al. 2012). The NM function has been evaluated for knee extensors (KE) and plantar flexors (PF) pre- and immediately post-SMM using the isometric measurement of maximum voluntary contraction (MVC), neuronal and surface EMG stimulation (Grenier, et al. 2012). The twitch-interpolated method has been used to evaluate central fatigue. The peripheral changes were examined by stimulating the muscle in a relaxed condition. The energy cost, the mechanical work and the spatial-temporal model of walking were also evaluated pre-/post-SMM on a tape instrument in three equipment: sports, fight and March.

The results of the study show that the fatigue related to the SMM has not changed the energy of walking or mechanics, and the different equipment transported on the treadmill did not interact with this fatigue.(Grenier, et al. 2012)

In the case of the civilian population, the outdoor walking can be a recreational activity along with friends and family members, but this time spent away or moderate intensity physical activities, do not have the potential to simultaneously impose stress on several systems. of the human body. Physical requests caused by exposure to low temperatures and imposed by prolonged outdoor walking under adverse weather conditions, induce a state of accentuated fatigue, a low efficiency of thermoregulation processes that

perisap the development of a severe state of hypothermia, in the case of unprepared civilian population. for long distances terrestrial displacements. For any given unit of work, more man hours of labor or time are required in cold weather operations. By temperatures below -20°F (-32°C) workflow has seriously slowed down (Army 2017).

The major observations were the varying thermoregulatory responses and the negative energy balance incurred during the hill walk. It is concluded that recreational hill walking can constitute a significant metabolic and thermoregulatory strain on participants (Ainslie, et al. 2002). The triggering of an armed conflict, of an invasion in close correlation with the weather conditions, synchronizing the military operations with the low temperature values as well as the precipitation, leads to a stressful factor for the civilian population in refugee columns, to secure areas, away from the danger of the war . Temperature variations, precipitation, land status can influence mobility and distances that civilians can cover. Relief forms, rivers, frozen lakes, marshy or water soil surfaces, slippery roads will immobilize the means of transport and refugee columns (Barracks 2001).

This study aimed to make a diagnosis among the civilian population regarding the perception of confrontation with a limited situation represented by the possible possibility of an armed conflict in which the need to move in a safe area, far from the horrors of the war, to be realized in hostile weather conditions.

Methods

The study was conducted on a sample of 107 subjects, university customers, bachelor's degree. Before making and applying the questionnaire, discussions were held with the study participants, so that choosing the response options to show reality to the greatest extent and objective. The study method used was the questionnaire.

Results

The centralization of the results obtained in this study at the eight questions have been processed statistically and are further represented. At the first question: *Sensation of cold all the time is a common symptom of a number of medical conditions, such as:* the answer that has obtained the highest percentage, 62.7% – anemia, lack of iron in the diet or inability To produce sufficient red blood cells, it is in the general tendency registered by the recondents participating in this study. Other response variants were: 7.5% – hypothyroidism, 27.1% – Raynaud's consistency, 24.3% – Diabetes, lack of blood flow to the fingers and feet and 3.7% – anorexia.

The second question of study: *In what part of the day do you think you go through the cold 5 km?* Surprisingly, the respondents participating in the study, all civilians, without military or special training, considers that, the most favorable period for moving in hostile weather conditions, with low temperatures is – in the morning at 6.30, with a percentage of 72.9%. The physiological studies conducted show that the least favorable period for cold exposure is represented by the morning. The thermoregulation and mobilization systems of glycogen and free fatty acids in order to perform thermoregulation have the lowest yield at morning hours. The most suitable period for carrying out physical activities, moving in the field, transporting weights at low temperatures and on difficult displacement areas is the lunch period, the response variant - between 13 and 15 hours, surprisingly the lowest percentage in the options of the repondents, 15%. Other response variants were – Evening, after 19, with a representation of 3.7% and – after lunch, after 4 pm, having 8.4%. Providing by this study that the perception of civilian and incompletely informatin civilian persons regarding the movement, transport of weights and physical effort at low temperatures and unfavorable weather conditions can be an important factor that can be speculated.

The following question of the questionnaire applied was: *During a Walk for 4 Hours, at Between temperature -10^0 C and -20^0 C, what is the important period of time?*, the first answer variant was – the last 2 hours, with a percentage of 27.1%. The second answer variant – the middle period, 2 and 3 hours, set 23.4%. From the studies presented it appears that the degree of adaptability of the body to low and very low temperatures is recorded in the first part of the day. The first two variants of response, totaling 50.5% prove insufficient information and knowledge of the particularity of adapting the human body at low temperatures. The variant in which the first minutes represents the most important period of a cold environment is understood by only 10.3% – the first 20 minutes, being the response variant that summed up the smallest percentage, representing the most important period in terms of physiologically and the least important period from the perspective of the respondents. Last answer being - the last 30 minutes with a percentage of 39.3%

The centralization of the results obtained in the fourth question: *the probability of a heart attack increases when physical effort is made* – it shows that the level of general information on the risks represented by the physical effort in the cold or hot climatic environment is minimal. The risks to which civilians are exposed in case of physical activities are increased, 85% consider that there is no request at the cardiorespiratory level in case of hot effort. Another worrying percentage, respectively 93.5%, considers that the effort in the cold environment is not a risk factor. Other responses provided by the respondents were - during the night 16.8%, but – the heart attack is not caused by the air temperature, 61.7% represents a percentage confirm that the information level is insufficient and the exposure to low temperatures Without a preliminary training and appropriate equipment represents an important risk in the event of a possible forced movement over medium and long distances in the cold environment.

The low experience and the level of precarious information contribute to the formation of a distorted perception with insufficient correlation between the real possibilities and the perception of their own performances. Question Number Five: *If the Snow is Light and the Air Temperature Has Fallen Below -10^0 C, What Distance Can You Travel?* A percentage of 91.6% represents the share of those who overvalue their own physical performances and the level of supportability of a trips the winter at temperatures below -10^0 C. Thus, the two answers that have a correlation with the result of the studies and the real situations are: - About 2 km 8.4% and maximum 1 km 0%. The answers that confirm that there is an overvaluation of their own performances and a wrong perception about the effects produced by the low temperatures were: - more than 6.5 km 48,6% and between 5 and 6 km, 43%.

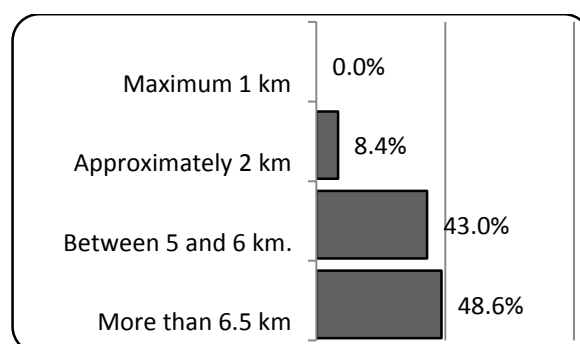


Figure no 1. Question number 5 – If the snow is light and the air temperature has fallen below -10^0 C, what distance can you travel in an hour?

In contrast to the two sets of answers addressed to previous questions, at the sixth question - *In winter at a temperature of 0 degrees, for 12 hours daily, you can take a walk, 7 days with a backpack of 20 kg?*, a percentage of 72.9% considers that it is impossible to move with a weight in the cold environment for 12 hours. The percentage of 14.9%, of those who consider that such travel is possible is represented by the two answers - very, very difficult.6.5%and under extreme conditions, yes, 8.4%. Another answer option was - I can't resist 12 hours, not in summer! 7.4%.

In a completely unexpected way, the perception of people participating in this questionnaire is that, adults over 50 years old, are those who have the ability to withstand a long period in the cold environment. At the question - *What category of population resists the best in the cold?* 73.8%, consider that young people or adults up to 50 years old do not have the physical ability to carry out physical activities in the cold environment. Three other answer variants were: young people under 15 years old. 0%, women. 11.2% and those between 15 and 25 years old, 15%. An important percentage among the participants in this study is in the age category under 25 years. The fact that only 15% of those who have answered the questions consider that they are able to move in the cold environment, falls into the tendency highlighted by the previous answers and confirms that the young population is not enough for forced trips over winter long distances.

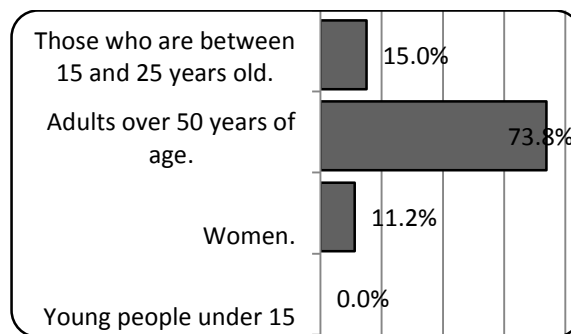


Figure no 2. Question number 7 - What category of population best withstand the cold?

The last question of this study brings a confirmation that most civilians have a very good perception about the level of training of the military personnel. Question Number eight: - *What professional categories resists more in cold weather conditions?* He had four answer variants, the first two being occupational areas in which there is a risk of exposure for long periods at low temperatures - the driver. 8.4% and the farmer, 5.7%. The last two answer variants were - the sports teacher, 36.4% and awaited and desired, the soldier 49.5%.

The way in which the training exercises in the military profession, the profile of the Romanian military are perceived by the civilians confirm that the Romanian army is the most important trust factor.

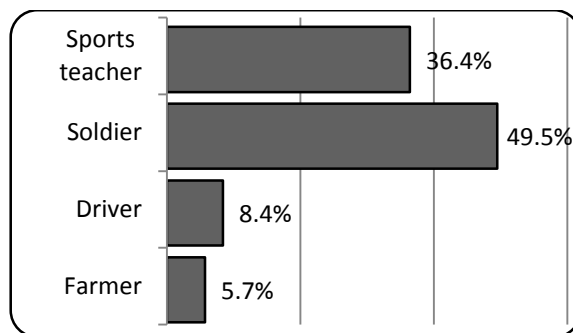


Figure no 3. Question number 8 – What professional categories resist more in cold weather conditions?

Conclusions

The increased activity, at the beginning of the winter 2022 of the Russian army on the border with Ukraine, created the civilian population located in the conflict areas a limit situation in which, for the shelter and avoidance of danger, groups of refugees were put in the situation to move to the cold environment. over long distances. The external dimension of the intensification of military activity, especially related to the situation on Syria, should be considered as having only a secondary importance (Wilk 2013). The misunderstanding of the world geopolitical context prior to the conflict in Ukraine has brought the civilian population to the limit of fleeing the war. The conflicts produced by the armed confrontations or other limit situations have shown that a large number of groups of civilians were put in the situation of fulfilling various tasks for which they did not have the necessary training. The answers provided by the participants in the questionnaire bring to the attention of the specialists the need to prepare civilians regardless of age and awareness of the population regarding the preservation and increase of the physical ability to move to the field, in the cold environment.

The level of information regarding the risks that appear with the exposure to low temperatures over a longer period is minimal, the perception of the majority of the study participants being in a small correlation with the real capacities to support low temperatures to carry moderate weights and to move on slippery or different surfaces.

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