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Development of a tactical first aid training program for the Police and Border Guard Board

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ABSTRACT

In high-threat situations, police officers must provide lifesaving assistance to the best of their ability. With the increasing number of terrorist attacks, officers are likely to encounter severely injured individuals or even sustain injuries themselves during operations. However, current training does not fully address the challenges they may face in such critical situations.

This study aimed to develop and implement a tactical first aid training program for law enforcement officers within the Police and Border Guard Board. The research is part of a broader nationwide tactical medical concept.

The study was conducted in two phases: the first phase focused on developing the training program, while the second phase involved its implementation among law enforcement officers. Between 2022 and 2024, more than 300 officers participated in the training. The pilot results were positive, and training will continue in 2025. The feedback indicates that a standardized training program significantly enhances police officers' knowledge and skills in performing lifesaving techniques as outlined in the tactical first aid curriculum. The developed program has already been integrated into the Estonian Academy of Security Sciences curricula.

To maximize lifesaving capabilities, a structured training program is essential for equipping first responders with the necessary skills to handle high-risk incidents. Establishing systematic tactical first aid training is a strategic priority for enhancing first response and special operations capabilities. Moving forward, it will be crucial to evaluate the impact of the training program on the quality of assistance provided, as well as to assess the ongoing training needs of police officers.

1. Introduction

Trauma-related complications are most common in the immediate aftermath of an injury, occurring in 50% to 70% of cases at the accident site and within the first hours of hospital admission (Wagner et al. 2021). It is well established that the quality of initial care in trauma situations plays a crucial role in determining mortality outcomes (Bedard et al. 2020). The effectiveness of prehospital trauma management largely depends on the skills and expertise of the first responder (Teuben et al. 2024).

In Estonia, police officers are legally obligated to provide assistance under the Law Enforcement Act, which mandates aid to injured individuals. If the use of direct coercion results in injury, the law enforcement agency must ensure that first aid is provided as soon as possible and, if necessary, call an ambulance (Riigi Teataja 2011). Tactical situations are inherently dynamic, high-risk, and unpredictable. Given these conditions, it is unrealistic to deploy civilian emergency medical personnel into danger zones without adequate preparation and specialized protective equipment.

According to Estonian legislation, regulations established by the Minister of Health and Labour (currently Minister of Social Affairs) define the competencies of ambulance services, which do not include tactical training or the use of ballistic protection. Additionally, the team leader has the legal right to delay or refuse assistance if there is a potential threat to the ambulance crew's safety – a scenario that is common in tactical situations (Riigi Teataja 2018a).

Over the past five years, shootings in Estonia have impacted not only civilians but also ambulance crew members. Emergency medical services (EMS) generally lack the necessary training and preparation to operate effectively in high-risk tactical situations (de Valence and Suppan 2023). Additionally, they do not have the tools required to neutralize threats or protect themselves from potential dangers. To minimize risks to medical personnel, they are typically kept out of hazardous areas

and positioned in designated safe zones instead (Hick et al. 2016). Ideally, ambulance personnel provide assistance immediately after a threat has been neutralized. However, without specialized tactical training, they are unable to enter high-risk areas. In cases of sudden attacks where the assailant remains at large, evacuating victims can take hours. During this time, those with severe or life-threatening injuries may die without immediate intervention (Martaindale and Blair 2019). Meanwhile, police officers frequently encounter tactical situations where casualties require urgent medical assistance, yet due to a lack of preparation for such scenarios, no trained personnel are on-site to provide aid (Tierney 2016).

Under the current cooperation procedures in Estonia, when an incident falls under police jurisdiction, the police are responsible for ensuring the safety of their partners. If the area cannot be secured, the police must evacuate the injured from the danger zone and transfer them to the ambulance personnel. This responsibility highlights the need for police officers to receive better training in providing lifesaving aid in high-risk environments (Riigi Teataja 2018b).

Most high-risk police operations in civilian environments can be classified as rescue operations. In varying danger zones – whether a forest, an urban setting, or an active threat area – every officer is responsible for delivering tactical first aid. Teams operating in such conditions cannot always rely on an internally designated medic or external medical support (Jacoby et al. 2020).

According to an internal security tactics analysis by the Police and Border Guard Board (PBGB), there have been an average of 50 assaults on police officers annually in recent years. In high-risk situations, officers must provide lifesaving aid to the best of their ability. However, depending on the nature of the incident, ambulance access to the scene may be delayed or entirely restricted. To maximize lifesaving capacity, there is an increasing need for a structured training program that equips first responders, particularly police officers, with the skills to administer critical medical aid during high-risk operations.

In Estonia, first aid training for police officers varies in scope and is offered by different institutions, with course durations ranging from 40 to 400 hours. The basic first aid course included in the foundational training at the Police and Border Guard College (PBGC) is similar in structure and content to a standard civilian first aid course, such as the 16-hour Basic First Aid Course provided by the Estonian Red Cross. However, this training does not adequately prepare police officers for providing first aid in law enforcement-specific tasks, particularly in tactical scenarios. A field officer must be capable of independently making decisions regarding lifesaving first aid and effectively assisting not only themselves and injured colleagues but also, when possible, civilians in life-threatening situations. In this context, a police officer refers to an individual without formal medical training, whether they are a standard duty officer or a member of a specialized police unit. While specialized units do have designated medics trained to the competency level of an emergency medical technician (paramedic, as defined in the military context), as of 2021, the PBGB lacked an officially approved training program to equip officers with the skills necessary to provide lifesaving aid in tactical situations.

According to § 77 of the Law Enforcement Act, if a police officer injures a person as a result of the use of direct coercion, they are required to provide first aid. However, the law does not mandate providing aid to third parties. A police officer assigned as a medic within their unit has completed either the Defense Forces Squad Paramedic Training or the Emergency Medical Technician (EMT) training at Tallinn Health University of Applied Sciences. Only medics who have completed the aforementioned specialized training are authorized to perform specific lifesaving medical procedures, and only when the legal framework grants them the right to do so. Each year, police medics undergo 60–80 hours of additional training in their field. These training sessions are conducted by both PBGC medical instructors and partners from civilian and military structures. Additionally, all police medics are required to complete the Tactical Combat Casualty Care (TCCC) International course.

In recent years, the rise in terrorist attacks in civilian environments worldwide has highlighted the need for strategies that simultaneously address both the immediate threat and resulting casualties. Analyzing past incidents and considering Estonian legislation (Riigi Teataja 2011), it can be assumed that police officers are likely to encounter severely injured individuals or sustain injuries themselves during operations. As a result, managing injuries and casualties must become the primary focus of tactical first aid, as police officers serve as the first lifesaving resource in such situations (Jacoby et al. 2020).

Providing lifesaving assistance in high-risk tactical situations can significantly reduce mortality rates (Heiskell 2006). Police units operate under the principle of neutralizing the threat while ensuring aid is provided. Even after a threat has been neutralized, certain conditions may still prevent paramedics from entering potentially hazardous areas. To maximize survival rates, police officers must receive specialized training in lifesaving procedures. The most effective training methods for this purpose include TCCC and Tactical Emergency Casualty Care (TECC). Additionally, officers require appropriate equipment to administer aid effectively (Martaindale and Blair 2019).

Prehospital Trauma Life Support (PHTLS) training plays a crucial role in aligning prehospital and in-hospital care standards (Häske et al. 2017). A recent study found that PHTLS training enhanced participants' self-confidence in managing severe trauma in prehospital settings, including communication and extramural treatment (Teuben et al. 2024).

The current study aligns with the Estonian National Health Plan 2020–2030, which prioritizes injury prevention and aims to enhance readiness for lifesaving first aid (Sotsiaalministeerium n.d.). Furthermore, establishing a structured training system for first responders is a strategic objective of the PBGB to strengthen response and special operations capabilities, as outlined in the PBGB's capability strategy. This study is part of a broader initiative focused on developing, for the first time, a comprehensive tactical first aid concept for the PBGB. The concept incorporates both

theoretical instruction and hands-on simulation- and scenario-based training.

2. Materials and methods

The aim of the study was to develop a structured and standardized training program to teach lifesaving first aid knowledge and skills, and to implement it within the PBGB. To achieve this goal, the following tasks were set:

- to describe the principles of providing lifesaving aid based on the TCCC, PHTLS, and Advanced Trauma Life Support (ATLS) standards, which will serve as the evidence-based foundation for developing the training program.
- to develop a comprehensive training program for providing tactical first aid for the PBGB.
- to pilot the tactical first aid training program among the law enforcement officers.

In the first stage of the study, existing guidelines and tactical medicine manuals were examined. An analysis of the existing guidelines was carried out to serve as input for program creation, considering the Estonian context, including first aid provided by the police in tactical situations and lifesaving aid principles. As a result, standards widely used in Europe and the United States were applied.

To ensure quality throughout the study, the training regulations of the Estonian Defence Forces and the Defence League were adhered to. These regulations serve as the foundational framework for military training and provide the closest thematic reference to the issues addressed in this project. The document outlines the use of the Systems Approach to Training (SAT) model, a systematic method for organizing and conducting training. It also defines the hierarchy of training documents, key training concepts, training goals and principles, general organization, quality assurance responsibilities, and relevant parties. The SAT model, which ensures training quality, consists of four stages: 1) analysis, 2) design, 3) implementation, and 4) evaluation (Mabrouk 2021).

The development of the tactical medicine program was guided by Kotter's 8-step change management theory, as outlined in *Leading Change* (Kotter 2012; HBR n.d.). This framework helped establish a timeline with the necessary activities for managing the process. The study began with the first step: creating awareness of the urgent need for change. The second step involved communicating this urgency to the organization's top leadership, framing it as a "window of opportunity" – open now but potentially closing soon. This sense of urgency led to the third step: generating momentum, followed by the fourth step, which focused on uniting individuals into a cohesive group with a clear command to direct their efforts (Salman and Broten 2017). These steps were reinforced through discussions with police officers and incidents that emphasized the problem, prompting actions to identify and implement solutions, some of which are already underway. The organization acknowledged the need to develop tactical first aid skills, ensuring every officer is equipped to provide lifesaving assistance on-site. The subsequent steps in Kotter's theory, such as granting autonomy, achieving short-term wins, continuing progress, and consolidating changes (steps 5–8), are currently in the early stages of implementation. Recognizing that large-scale changes take time, the organization is in the transition phase, with some elements already underway.

To ensure quality, the ISO 9000:2015 standard was applied, following the principles of quality management. These principles include client-centeredness, strong leadership, active involvement, a process-oriented approach, systematic management, continuous improvement, evidence-based decision-making, and fostering mutually beneficial relationships with suppliers (EVS-EN ISO 9000:2015).

3. Results

According to scientific literature, first aid skills are crucial for police officers, as there are situations where they may arrive at the scene before emergency medical services or where the police are responsible for managing the incident. Given that the danger level at an incident may hinder access to professional medical assistance, police officers are often tasked with performing lifesaving measures and evacuating individuals from hazardous areas to safety.

In response to this need, an increasing number of special weapons and tactics (SWAT) units have integrated emergency medical personnel into their teams. Some agencies have trained full-time SWAT officers as EMTs, while others have prepared medical personnel to participate in tactical police operations. During a SWAT mission, tactical medics accompany the team in the field, providing first aid to injured team members or civilians caught up in the operation.

A police officer receives their initial first aid training at the Estonian Academy of Security Sciences (EASS). However, it has become evident that this training is not sufficient for officers to provide lifesaving assistance in high-risk tactical situations. When officers join the PBGB, they must undergo retraining based on a new approach that aligns with modern requirements. A developed training program has been implemented at the EASS.

For this program, the most suitable lifesaving assistance system for tactical situations – TCCC – has been selected, and it has been adapted to better fit the civilian environment by incorporating guidelines from the PHTLS and ATLS systems (Wölfl et al. 2008). As the PBGB closely collaborates with EMS during incidents involving casualties, we selected specific components from PHTLS that align with EMS practices – for example, in the R (respiration) section, we use RISE 'N' FALL, which is not explicitly described in the MARCH (massive hemorrhage, airway, respiration, circulation, head injury/hypothermia) algorithm. The rest of the training follows the TCCC principles. Additionally, some police officers, primarily unit medics, have completed the TCCC International course.

The majority of first responders lack a medical training background, which means they are not authorized, according to current legislation, to perform invasive procedures. In designing the initial training program, interventions that involve invasive procedures have been excluded. Since first re-

sponders operate in a high-risk environment, the training must be very simple, especially for individuals working under high stress. Therefore, for first responders who are not medical professionals, all invasive procedures and complex medical equipment had to be removed from the training.

According to ATLS, injuries result in death within predictable timeframes. For example, airway obstruction leads to death more quickly than respiratory failure, which itself is faster than death caused by blood volume loss. Additionally, damage caused by an expanding intracranial mass is another critical and life-threatening factor. The classical trimodal model of trauma mortality identifies the first peak as immediate death, occurring within minutes of the injury. These fatalities typically result from severe and likely fatal injuries. Victims in this category are declared dead at the scene, or they succumb shortly after hospital arrival. Reports often classify such deaths as those occurring at the scene, within one hour of hospital admission, or in the emergency department (Sobrino and Shafi 2013).

The mnemonic ABCDE provides a structured approach for assessing and treating all trauma patients, emphasizing the order of airway management, breathing, circulation, disability (neurological status), and exposure/environment control (ATLS Subcommittee et al. 2013, 2018). The assessment and treatment of trauma patients occur concurrently, utilizing a dual-phase evaluation process: primary and secondary surveys. These surveys involve addressing immediate life-threatening conditions and managing complications, including shock caused by one or multiple injuries (NAEMT n.d.).

TCCC, PHTLS, and ATLS algorithms divide trauma assessment and care into two main stages:

1. Primary survey and resuscitation focuses on identifying and addressing immediate life-threatening conditions through systematic evaluation and lifesaving interventions.
2. Secondary survey: this involves a thorough and detailed examination of the patient to identify all injuries, both visible and hidden, ensuring comprehensive treatment and management.

Both stages prioritize systematic and timely care for trauma patients, ensuring that life-threatening conditions are addressed promptly at every stage of treatment (Deployed Medicine n.d.; ATLS Subcommittee et al. 2018; NAEMT n.d.).

A theoretical and practical training session was conducted, consisting of a lecture and a skill station. Afterward, participants had to apply what they had learned in a scenario-based exercise. Over time, the training was adjusted – for example, the use of invasive interventions was removed – and focused only on airway management through maneuvers or positioning. In summary, the program was simplified to ensure that officers without medical education could perform essential lifesaving interventions in high-risk environments within their knowledge of anatomy and physiology.

As a result, the training program consists of modules on trauma management, resuscitation, and mass casualty management, with 90% of the time dedicated to practical exercises, case solving, and drills. The 40-hour program covers the following topics:

- introduction to tactical first aid training;
- phases of first aid assistance (including assessment and scene safety, primary survey, secondary survey, handover to medics);
- identifying severe bleeding, use of arterial tourniquet (including visible and invisible signs of severe bleeding, actions);
- ensuring airway patency through positioning (head-tilt, chin-lift maneuver, jaw-thrust maneuver, positioning for conscious and unconscious but breathing individuals);
- introduction to MARCH mnemonic with practical demonstration;
- MARCH drills;
- situation-task resolution (problem-solving framework used in tactical training, particularly for law enforcement, military, and emergency responders).

"Hands-on" experience during training is known to enhance police officers' confidence in applying their first aid skills in real-world situations. It also improves their decision-making under stress and strengthens team coordination.

The skills of officers vary significantly, which has created the need for a unified training program that would provide police officers with lifesaving skills training. As the first step toward standardization, the training program was piloted in one specialized unit in January 2022, with which one of the project authors is closely associated. The results showed that the program was effective and could be piloted more widely among police officers. The enlarged pilot project ran for eight months, training approximately 70 first responders. The program was continuously updated throughout this period, incorporating feedback from participants. The task scenarios and their formulations were adjusted according to the skills, accompanied by an increase in the necessary supplies. Continuous communication between the trainees and the team ensured that necessary adjustments were made to the training program. The pilot results showed that first responders had a strong interest and motivation to learn the necessary skills, and their participation contributed to the development of the program. The final training program was implemented in 2022, and by 2024, a total of 300 police officers had been trained.

The created training program consists of modules on trauma management, resuscitation, and mass casualty handling. The training is conducted module by module. By the end of 2025, up to 800 officers are planned to be trained. Mass casualty exercises, or simulated drills designed to train first responders on how to effectively manage and triage mass casualty incidents, are expected to commence in 2025. The evaluation of the training's impact is planned to begin at the end of 2025, using a Kirkpatrick's evaluation model for this purpose (Kamgar Amaleh et al. 2024).

4. Discussion

Trauma-related complications are most common in up to 70% of cases immediately following an injury at the accident scene and during the first few hours of hospitalization. It is well established that the initial care provided in trauma cases plays

a significant role in influencing mortality rates (Kamgar Amaleh et al. 2024). The literature highlights that tactical first aid is a critical skill for police officers; however, the previous training format and frequency in Estonia did not adequately address the challenges they face during their duties. Officers within the PBGB have acknowledged the importance of this issue and recognized the need to enhance tactical first aid capabilities, particularly among first responders.

The findings of this study align with other research, showing that training provides law enforcement officers with essential skills to deliver immediate, on-site medical care and effectively stabilize trauma victims. Expanding this training to include more law enforcement officers is crucial for saving the lives of trauma victims in the future (Rothschild and Mathieson 2018).

5. Conclusions

The development of a standardized training program and the conducting of training sessions/modules have significantly improved police officers' knowledge and ability to apply lifesaving techniques, as outlined in the tactical first aid program. Practical training experience is considered crucial in boosting officers' confidence in utilizing their first aid skills during real-life situations (Ndile et al. 2020). Enhanced skills improve their capacity to effectively respond to life-threatening injuries, particularly in the context of terrorist incidents. This study has led to sustainable developments with direct practical applications, having broader value as the study's outcomes are now used for training across the entire agency and nationwide. As previously mentioned, this development is part of the broader tactical first aid concept within the Police and Border Guard Board.

In the future, it will be necessary to assess the impact of the implemented training program on the quality of assistance provided. Additionally, a systematic evaluation of the training needs among police officers is required.

This study has some limitations. It is important to recognize that there is limited literature on the tactical medical training of law enforcement officers. Additionally, this is a new national initiative with potential for further growth, and being the first of its kind, it cannot be compared to previous efforts. This is a descriptive study that offers an overview of the development activities created. Methodologically, statistical analysis was not used, as it was not the objective of the study.

The study also has several strengths. One notable strength is that the authors of the developed program have extensive experience in emergency medicine, training, military service, and law inforcement, which made the need for development clear, and identifying it was both logical and well-founded. The authors believe that the first responder training program they created offers a strong foundation for ensuring public safety and strengthening international cooperation. They also do not rule out expanding the training to police officers from neighboring countries.

Data availability statement

All research data are contained within the article and can be shared upon request from the authors.

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Taktikalise esmaabi koolitusprogrammi väljatöötamine Politsei- ja Piirivalveametile

Heiko Porval ja Jekaterina Šteinmiller

Suure ohu olukordades on politseil kohustus anda elupäästvat abi oma võimete piires. Arvestades terrorismirünnakute arvu suurenemist, on tõenäoline, et politseiametnikud puutuvad kokku raskelt vigastatud inimestega või saavad ise vigastada politseioperatsioonide käigus. Kahjuks ei käsitlenud varasem koolitus piisavalt neid vajadusi, mis võivad tekkida selliste ülesannete täitmisel. Uuringu eesmärk oli välja töötada taktikalise esmaabi koolitusprogramm Politsei- ja Piirivalveametis teenivatele ametnikele. Uuring on osa suuremast riiklikust taktikalise meditsiini kontseptsioonist.

Uuring viidi läbi kahes etapis: esimene etapp keskendus koolitusprogrammi väljatöötamisele ja teine etapp koolitusprogrammi rakendamisele politseiametnike seas. Kokku koolitati 2022.–2024. aastal üle 300 inimese. Pilootuuringu tulemused olid positiivsed ja koolitus jätkub 2025. aastal. Tagasiside põhjal on standardiseeritud koolitusprogrammi rakendamine parandanud politseiametnike teadmisi ja oskusi elupäästvate tehnikate kasutamisel, mis on sätestatud taktikalise esmaabi programmis. Arendatud koolitusprogrammi rakendatakse Eesti Sisekaitseakadeemias.

Maksimaalse elupäästmise võimekuse tagamiseks on vaja süsteemset koolitusprogrammi, mis varustab esmaseid reageerijaid oskustega elupäästva abi andmiseks kõrge riskiga olukordades. Süsteemne taktikalise esmaabi koolitus on esmaabi ja eritegevuse võimekuse arendamise strateegiline eesmärk. Tulevikus tuleb hinnata rakendatud koolitusprogrammi mõju osutatud abi kvaliteedile. Lisaks on vaja süsteemset koolitusvajaduste hindamist politseiametnike seas.