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Entry-Level Forward Surgical Team Training Is Associated with Increased Confidence of Primary Combat Surgeons

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Abstract

Background: In recent years, we have established an entry-level Forward Surgical Team (FST) training program in a Chinese military medical university for the 5th grade undergraduates, who would be deployed to different military medical services as primary combat surgeons. This study aimed to assess the role of this pre-service training in improving their confidence with combat medical skills, after several years since they received the training. **Methods:** We conducted a nationwide survey of 239 primary combat surgeons who have ever participated in an entry-level FST training program before deployment between June 2016 and June 2020, which was for evaluating on a 5-point Likert scale the benefits of entry-level FST training and conventional surgery training in improving their confidence with combat medical skills. The difference in scores was compared using the student *t*-test. Significance was considered as $P < 0.05$. **Results:** The total score was significantly higher for entry-level FST training than that for conventional surgery training (30.76 ± 4.33 vs. 28.95 ± 4.80, $P < 0.001$). There was no significant difference between the training for surgical skills confidence scores (18.03 ± 8.04 vs. 17.51 ± 8.30, $P = 0.098$), but for non-technical skills, the score of entry-level FST training was significantly higher than that of conventional surgery training (12.73 ± 5.39 vs. 11.44 ± 5.62, $P < 0.001$). The distributions of confidence scores were different under various subgroups by demographics. There were no significant differences in scores between the two training in all specific surgical skill sets except "life-saving surgery" ($P = 0.011$). Scores of all 4 non-technical skill sets were significantly higher for entry-level FST than those for conventional surgery training ($P < 0.05$). **Conclusions:** The training should be considered as an essential strategy to improve confidence in combat medical skills, especially life-saving surgery and non-technical skills, for primary combat surgeons.

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Keywords

Forward Surgical Team Training, Primary Combat Surgeons, Combat Medical Skills, Increased Confidence

1. Introduction

Forward Surgical Team (FST) is a highly mobile team for surgical missions on the battlefield, providing the first level of resuscitative surgical care within the theater of combat operations [1]. FST skills are useful for surgeons at all levels throughout the continuum of combat surgical care, and FST-related training or experience is deemed as important methods for learning war surgery and sustainment of combat surgery skills [2] [3] [4]. The current condition of FST training in China is far from satisfactory. Though military medical schools have such FST-related courses as damage control resuscitation and damage control surgery [5], there are still certain obstacles and deficiencies in terms of concepts, equipment, processes, and evaluation in the development of FST training.

Under such circumstances, in recent years, we have established an entry-level FST training program in a Chinese military medical university for the 5th grade students, equal to the last year of the undergraduate program in the Chinese medical education model, who have already finished and passed the theoretical courses of medicine and are with some basic surgical skills [6]. These students would be deployed to different places of military medical services as primary combat surgeons. Before deployment, each of them participated in a 30-day entry-level FST training program, which mainly aimed to enhance the techniques of combat casualty care and promote teamwork among team members, at the Center for Clinical Skills Training (CCST) of our university. Besides this, the future primary combat surgeons also received specific conventional surgery training, a standard program in military medical universities for the 5th grade students, in the pre-service training stage. In fact, because of the long-term peace in China, these students mainly received this sort of training during their college, including the management of common surgical diseases and injuries rather than combat traumas, such as cancer and injuries from traffic accidents.

For primary combat surgeons, the level of confidence in combat medical skills is closely related to their performance and the effects of military operations. By improving their confidence, they can make better use of combat medical skills, they have acquired through long-term learning and practice. However, confidence can be more difficult to build for them, compared to senior combat medics. The difficulty may be related to a lack of targeted pre-deployment training or frequent military operations experience. It is generally believed that improvement of confidence from the appropriate training can maintain for a long. Thus, this national study first explored the long-term effect of the specific pre-service training on improving primary combat surgeons' confidence with

combat medical skills, by comparing their subjective evaluation for entry-level FST training and conventional surgery training after several years since they received the training.

2. Materials and Methods

Entry-level FST training program was devised as a 30-day program composed of a multimodality combination of didactic lectures, clinical practices and standardized evaluations [6]. Trainees were taught the fundamental FST skills including life-saving surgery, damage control surgery and other combat casualty care skills, and will be trained as teams to perform surgical missions efficiently on the battlefield. Conventional surgery training in this article meant a standard pre-service training program of reinforcing clinical skills for treating common surgical diseases in civil hospitals, such as trauma, infection, tumor and deformity. It represented the systematic summarization of undergraduates' last-year surgery clinical practice in affiliated hospitals. Actually, duration and modality were comparable for entry-level FST training and conventional surgery training. The main difference between the two training was that ideas and contents of the former tend to be exclusively useful on the battlefield while those of the latter are more diversified and more appropriate for civil hospitals.

We conducted a nationwide survey of 239 primary combat surgeons who have ever participated in both entry-level FST training program and conventional surgery training program of Naval Medical University (Second Military Medical University) before deployment between June 2016 and June 2020. All the respondents were young males and responsible for the first level of surgical care. The survey was approved by the Human Ethics Committee of Naval Medical University (Second Military Medical University). Informed consent was obtained from all participants.

This study was for evaluating on a 5-point Likert scale the benefits of entry-level FST training and conventional surgery training in improving primary combat surgeons' confidence with combat medical skills (1 = not beneficial, 2 = mildly beneficial, 3 = moderately beneficial, 4 = considerably beneficial, 5 = extremely beneficial), which includes 2 major and 10 small skills sets (**Table 1**) based on the literature [5] [7] [8] [9] and our practice. The primary judgment criterion was the score, described as mean (± Standard Deviation [SD]), attributed by the surgeons to entry-level FST training or conventional surgery training. Difference in scores of entry-level FST training and conventional surgery training was compared using student *t*-test. Data were analyzed using IBM SPSS 22.0 (IBM Inc., New York, NY, USA). Significance was considered as $P < 0.05$.

3. Results

Of the 239 surveys distributed all 239 were completed. As shown in **Figure 1**, the total score of primary combat surgeons' confidence was significantly higher for entry-level FST training than that for conventional surgery training (30.76 ± 4.33

Table 1. Skills sets of combat medical skills of primary combat surgeons.

Skills sets	Techniques
Surgical skills	
Life-saving surgery	Amputation, vessel repair, tracheotomy, open pneumothorax closure, closed drainage of pneumothorax, exploratory thoracotomy, peri-cardiocentesis, extracorporeal membrane oxygenation, exploratory laparotomy, craniotomy, and extremity repair
Damage control surgery	Packing hemostasis in parenchyma organ injuries, hemostasis and bandaging in extremity, ligation, compartment syndrome decompression, severe open fracture fixation, debridement, hollow organs clamping, colostomy, lienal rupture repair, liver rupture repair, and firearm injury debridement
Damage control resuscitation	Permissive hypotensive resuscitation, early hypothermia prevention, early administration of blood products, rapid control of hemorrhage and infection, and administration of antifibrinolytic agents and coagulation factors
Adult critical care	Preventing circulatory, respiratory and metabolic disorders
Emergency airway management	Airway assessment, maneuvers to open the airway, application of simple airway support devices, needle cricothyroidotomy or surgical cricothyroidotomy, and effective positive-pressure ventilation using a bag and mask
Battle medical care administration	Triage and evacuation within the scope of responsibility
Non-technical skills	
Leadership and management	Leadership, maintenance of standards, planning and preparation, workload management, and authority and assertiveness
Teamwork and cooperation	Team building/maintaining, support of others, understanding team needs, and conflict solving
Problem solving and decision making	Definition and diagnosis, option generation, risk assessment, and outcome review
Situation awareness	Notice, understand, and think ahead

vs. 28.95 ± 4.80, $P < 0.001$). There was no significant difference between the training for surgical skills confidence scores (18.03 ± 8.04 vs. 17.51 ± 8.30, $P = 0.098$). Further, for non-technical skills, the score of entry-level FST training was significantly higher than that of conventional surgery training (12.73 ± 5.39 vs. 11.44 ± 5.62, $P < 0.001$).

Table 2 demonstrated subgroups confidence scores of entry-level FST training and conventional surgery training by demographics. When primary combat surgeons were grouped by years of medical practice, the score for entry-level FST training was statistically higher than that for conventional surgery training in the more years of medical practice subgroup (31.79 ± 4.23 vs. 28.76 ± 5.30, $P < 0.001$) rather than the fewer years of medical practice subgroup (29.57 ± 4.16

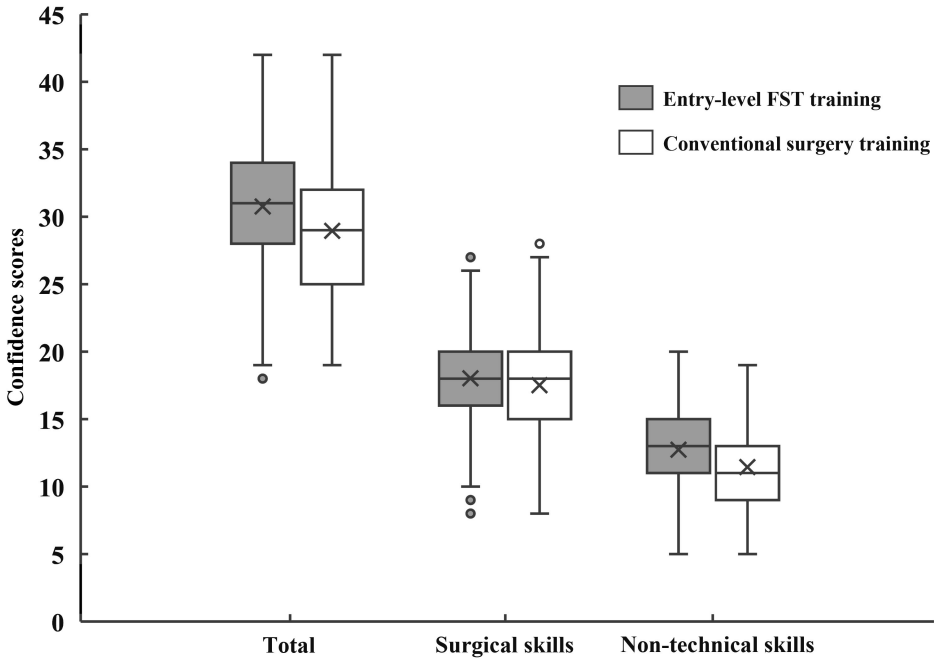

Figure 1. Confidence scores distributions of entry-level FST training and conventional surgery training. Whiskers represent minimum and maximum values. Boxes represent medians with 25th and 75th percentiles. Crosses in the Boxes represent mean values. Dots represent statistical outliers.

Table 2. Subgroups confidence scores of entry-level FST training and conventional surgery training by demographics.

Demographics	Cases	Entry-level FST training	Conventional surgery training	*t*-value	*P*-value
Total	239 (100%)	30.76 ± 4.33	28.95 ± 4.80	4.330	<0.001
Years of medical practice					
0 - 2	128 (53.6%)	31.79 ± 4.23	28.76 ± 5.30	4.845	<0.001
3 - 5	111 (46.4%)	29.57 ± 4.16	29.17 ± 4.17	0.782	0.436
Years of military service					
5 - 8	149 (62.3%)	30.58 ± 4.25	29.26 ± 4.84	2.556	0.012
9 - 12	90 (37.7%)	31.04 ± 4.47	28.42 ± 4.71	3.772	<0.001
Branch of service					
Army	38 (15.9%)	31.92 ± 3.97	28.63 ± 5.34	2.843	0.007
Navy	100 (41.8%)	30.74 ± 4.46	28.99 ± 4.96	2.715	0.008
Air force	26 (10.9%)	32.04 ± 3.87	28.57 ± 4.64	2.692	0.012
Rocket force	15 (6.3%)	31.80 ± 3.78	27.60 ± 6.74	2.120	0.052
Strategic support force	12 (5.0%)	28.00 ± 5.56	29.83 ± 3.90	−0.908	0.383
Joint logistic support force	48 (20.1%)	29.54 ± 3.93	29.52 ± 3.58	0.033	0.974
Specialty training					
None	109 (45.6%)	31.27 ± 4.88	27.99 ± 4.93	4.538	<0.001
Trauma surgery	88 (36.8%)	30.35 ± 3.97	29.07 ± 4.87	2.118	0.031

Continued

Other surgical subspecialty	10 (4.2%)	29.20 ± 3.19	31.5 ± 3.47	−1.830	0.100
Critical care	32 (13.4%)	30.63 ± 3.38	31.09 ± 3.50	−0.733	0.469
Primary practice environment					
First-aid unit	132 (55.2%)	31.15 ± 4.15	28.46 ± 5.11	4.682	< 0.001
Field hospital	64 (26.8%)	30.86 ± 5.02	29.67 ± 4.82	1.304	0.197
Base hospital	33 (13.8%)	29.18 ± 3.61	29.64 ± 3.09	−0.702	0.487
Military academic	7 (2.9%)	29.29 ± 3.40	27.71 ± 4.96	1.041	0.338
Others	3 (1.3%)	32.00 ± 2.65	30.33 ± 5.51	0.762	0.525
Military operations months per year					
1 - 4	13 (5.4%)	29.31 ± 5.33	31.15 ± 5.19	−0.142	0.318
5 - 8	189 (79.1%)	30.93 ± 4.36	28.63 ± 4.82	4.745	< 0.001
>8	37 (15.5%)	30.41 ± 3.79	29.81 ± 4.38	0.755	0.455
FST experience					
Yes	27 (11.3%)	29.19 ± 2.87	28.96 ± 3.19	0.477	0.638
No	212 (88.7%)	30.96 ± 4.45	28.95 ± 4.98	4.319	< 0.001

vs. 29.17 ± 4.17, $P = 0.436$). However, in both more and fewer years of military service subgroups, entry-level FST training received significantly higher scores than conventional surgery training ($P = 0.012$ and $P < 0.001$). When branch of service was discussed, in the subgroups which occupying large proportion of primary combat surgeons (Army, Navy and Air Force), entry-level FST training scores were noticeably higher than conventional surgery training scores ($P < 0.05$), but in Rocket Force, Strategic Support Force and Joint Logistic Support Force subgroups, there was no significant difference on scores ($P > 0.05$). As for specialty training, primary combat surgeons with none or trauma surgery training experience, rather than others, graded entry-level FST training better than conventional surgery training respectively ($P < 0.001$ and $P = 0.031$). Only surgeons in first-aid unit (55.2%) scored entry-level FST training statistically higher than conventional surgery training (31.15 ± 4.15 vs. 28.46 ± 5.11, $P < 0.001$), when primary practice environment was considered. Combat surgeons with moderate quantity of military operations months per year were the majority (79.1%) and only they graded entry-level FST training significantly higher than another training (30.93 ± 4.36 vs. 28.63 ± 4.82, $P < 0.001$). Meanwhile, surveyed surgeons without FST experience (88.7%) appraised entry-level FST training higher than conventional surgery training (30.96 ± 4.45 vs. 28.95 ± 4.98, $P < 0.001$).

Table 3 showed a comparison of the scores for each specific skill set of surgical skills and non-technical skills. There were no significant differences in scores of two groups in all surgical skills sets expect "life-saving surgery". Entry-level FST training gained much more score than another training for this skill set (3.16 ± 1.33 vs. 2.84 ± 1.33, $P = 0.011$). In contrast, scores of all the 4 non-technical

Table 3. Subgroups confidence scores of entry-level FST training and conventional surgery training by skill sets.

Skill sets	Entry-level FST training	Conventional surgery training	*t*-value	*P*-value
Total	30.76 ± 4.33	28.95 ± 4.80	4.330	<0.001
Surgical skills	18.03 ± 8.04	17.51 ± 8.30	1.663	0.098
Life-saving surgery	3.16 ± 1.33	2.84 ± 1.33	2.571	0.011
Damage control surgery	2.99 ± 1.45	2.95 ± 1.43	0.338	0.736
Damage control resuscitation	2.98 ± 1.42	2.94 ± 1.43	0.346	0.730
Adult critical care	3.12 ± 1.40	3.06 ± 1.35	0.497	0.619
Emergency airway management	2.75 ± 1.40	2.76 ± 1.43	−0.030	0.976
Battle medical care administration	3.02 ± 1.42	2.97 ± 1.34	0.473	0.636
Non-technical skills	12.73 ± 5.39	11.44 ± 5.62	4.878	<0.001
Leadership and management	3.21 ± 1.36	2.87 ± 1.41	2.593	0.010
Teamwork and cooperation	3.13 ± 1.40	2.79 ± 1.35	2.573	0.011
Problem solving and decision making	3.19 ± 1.32	2.90 ± 1.40	2.309	0.022
Situation awareness	3.21 ± 1.30	2.88 ± 1.47	2.669	0.008

skill sets were significantly higher for entry-level FST than for conventional surgery training ($P < 0.05$).

4. Discussion

Since recent years, we have established an entry-Level FST training program in Chinese military medical university for the 5th grade undergraduates, who would be deployed to different military medical services as the primary combat surgeons. This national study aimed to assess the role of this pre-service training in improving the primary combat surgeons' confidence with combat medical skills, after several years since they received the training. The results from our national survey showed that compared with conventional surgical training, entry-level FST training improved the confidence significantly, especially for non-technical skills, but was related to limited improvement for surgical skills. This study found such superiority of entry-level FST training may maintain several years since deployment of primary combat surgeons and was different from some other studies focusing on instant feedback of pre-deployment training [2] [10] [11].

In the study cohort, participants with fewer and more years of medical practice took essentially equal share of the total. However, only those with fewer years of medical practice were more likely to approve entry-level FST training. This could be partly because they had relatively good recollection while primary combat surgeons with more years of medical practice may forget more about entry-level FST training. In addition, regardless of the length of military service, the confi-

dence improvement effect of entry-level FST training was more approved than that of conventional training. Subgroup analyses for years of medical practice and years of military service were inconsistent and the reason may be the longer time of military service did not mean the longer time of medical practice for primary combat surgeons and undergraduates of our military medical university. As for subgroup analysis for branch of service, Army subgroup, Navy subgroup and Air Force subgroup predominated and tend to approve entry-level FST training, which was in line with conventional opinion. Both Rocket Force subgroup and Strategic Support Force subgroup occupied a small proportion and gave the negative opinion, which may be due to sampling error from small sample. Joint Logistic Support Force subgroup, taking a much percentage of the total participants, also did not consider that entry-level FST training was more useful for improving confidence of primary combat surgeons than conventional surgical training. For primary combat surgeons from Joint Logistic Support Force, there were ample opportunities for combat medical skills learning and practicing because most of them served in high-level military hospitals. They may fail to be impressed for entry-level FST training. The evaluation for entry-level FST training was significantly high among respondents with none specialty or trauma surgery specialty, while this trend was not seen among respondents with other specialty. In addition, only first-aid unit personnel were more likely to approve entry-level FST training for the confidence increasing effect, while primary combat surgeons mainly in other practice environments gave negative results. This may be due to the different degree of correlation between different m specialties, practice environments and FST. Primary combat surgeons with moderate military operations frequency and no FST experience were in the majority and tend to approve entry-level FST training, which may be particularly useful for confidence increasing of them. In conclusion, the distributions of confidence scores were different under various subgroups by demographics. Our study described the characteristics of the population that may be more likely to benefit from entry-level FST training.

Both technical skills and nontechnical skills are important factors to reduce errors in battlefield medical treatment and improve patients' safety. In Chinese Army, 22 surgeries are listed in FST operation procedure, as important parts of technical skills, and divided into two levels: emergency life-saving surgery and damage control surgery. According to the recent literatures [12] [13] and our preliminary research [6], technical skill sets of FST that primary combat surgeons must master mainly included life-saving surgery, damage control surgery, damage control resuscitation, adult critical care, emergency airway management and battle medical care administration. However, our findings suggested that only primary combat surgeons' confidence for life-saving surgery was considered to be promoted by means of entry-level FST training. This may be because life-saving surgery was the core content of entry-level FST training, making a deep impression on trainees.

Furthermore, we evaluated confidence of nontechnical skills by four dimensions: leadership and management, teamwork and cooperation, problem-solving and decision-making, situation awareness, and found that entry-level FST training caused significant improvement for them all. Actually, during tactical combat casualty care, non-technical skills refer to the capability to define and organize actions from first responders and then caregivers, and highlight combining good medicine with good tactics in order to avoid additional casualties [14]. The combat surgeon often assumes the role of leader in FST and they must be able to rapidly analyze threatening and rapidly changing conditions, assess what sort of medical help is required, construct an effective staff of care providers, communicate effectively among the staff and authorities in need, and make appropriate decisions rapidly, thus, ensuring the ongoing delivery of optimal care. Our entry-level FST training with emphasis on the human factors may help primary combat surgeons grow up quickly in these aspects since deployment. In recent years, several military medical studies concentrated on the importance of non-technical skills [9] [10] [15] [16], part of them evaluating both technical and non-technical skills might indicate the synchronous improvement of them [9]. However, we speculated the reason why the improve of confidence for non-technical skills was more apparent than that for surgical skills in our survey was that the promoting effect on human factors can last long time duration and it was not same for effect on most surgical skills.

This study is limited by the self-reporting nature of the survey instrument. Confidence in skill sets or procedures is a subjective measure and cannot be easily linked to primary combat surgeons' performance. With the aim of providing preliminary data to guide future investigations, this study does provide the foundation for developing a novel pre-service training method to better help future primary combat surgeons grow. Due to the time since establishment of entry-level FST training program was not long, our study included only a limited number of surgeons, and however, the respondents from troops across the country were representative enough.

5. Conclusion

Entry-level FST training in the undergraduate program, in the pre-service training stage, should be considered as an essential strategy to improve confidence in combat medical skills, especially life-saving surgery and non-technical skills, for primary combat surgeons.

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Ethics Approval and Consent to Participate

This survey was performed according to the ethical guidelines of the Helsinki Declaration and was approved by the Human Ethics Committee of Naval Medical University (Second Military Medical University). Informed consent was obtained from all participants.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Cai, Y., Ju, J., Liu, W. and Zhang, J. (2018) Military Trauma and Surgical Procedures in Conflict Area: A Review for the Utilization of Forward Surgical Team. *Military Medicine*, **183**, e97-e106. https://doi.org/10.1093/milmed/usx048

[2] Huh, J., Brockmeyer, J.R., Bertsch, S.R., Vanderspurt, C., Batig, T.S. and Clemens, M. (2022) Conducting Pre-Deployment Training in Honduras: The 240th Forward Resuscitative Surgical Team Experience. *Military Medicine*, **187**, e690-e695. https://doi.org/10.1093/milmed/usaa545

[3] Mancini, D.J., Smith, B.P., Polk, T.M. and Schwab, C.W. (2018) Forward Surgical Team Experience (FSTE) Is Associated with Increased Confidence with Combat Surgeon Trauma Skills. *Military Medicine*, **183**, e257-e260. https://doi.org/10.1093/milmed/usy080

[4] Valdiri, L.A., Andrews-Arce, V.E. and Seery, J.M. (2015) Training Forward Surgical Teams for Deployment: The US Army Trauma Training Center. *Critical Care Nurse*, **35**, e11-e17. https://doi.org/10.4037/ccn2015752

[5] Chen, S., Yang, J., Zhang, L., Yang, L., Qin, H., Liu, D., *et al.* (2019) Progress on Combat Damage Control Resuscitation/Surgery and Its Application in the Chinese People's Liberation Army. *Journal of Trauma and Acute Care Surgery*, **87**, 954-960. https://doi.org/10.1097/TA.0000000000002344

[6] Le, S.G., Xi, W., Li, W., Xiao, J. and Wang, Z.N. (2017) Entry-Level Forward Surgical Team Training in 5th Grade Students of Second Military Medical University of the Chinese People's Liberation Army. *World Journal of Surgery*, **41**, 2435-2543. https://doi.org/10.1007/s00268-017-4035-2

[7] Ramasamy, A., Hinsley, D.E., Edwards, D.S., Stewart, M.P., Midwinter, M. and Parker, P.J. (2010) Skill Sets and Competencies for the Modern Military Surgeon: lessons from UK Military Operations in Southern Afghanistan. *Injury*, **41**, 453-459. https://doi.org/10.1016/j.injury.2009.11.012

[8] Breeze, J., Blanch, R., Baden, J., Monaghan, A.M., Evriviades, D., Harrisson, S.E., *et al.* (2018) Skill Sets Required for the Management of Military Head, Face and Neck Trauma: A Multidisciplinary Consensus Statement. *BMJ Military Health*, **164**, 133-138. https://doi.org/10.1136/jramc-2017-000881

[9] Beaven, A., Griffin, D. and James, H. (2021) Highly Realistic Cadaveric Trauma simulation of the Multiply Injured Battlefield Casualty: An International, Multidisciplinary Exercise in Far-Forward Surgical Management. *Injury*, **52**, 1183-1189. https://doi.org/10.1016/j.injury.2020.09.023

[10] Py, N., Martinez, T., Boyé, M., Tourtier, J.P., Meaudre, E., Benbrika, W., *et al.* (2021) The French Pre-Deployment Advanced Course in Anesthesia and Resuscitation: De-

velopment and Future Prospects. *Military Medicine*, **186**, 804-810. https://doi.org/10.1093/milmed/usab035

[11] Sellier, A., Beucler, N., Desse, N., Julien, C., Tannyeres, P., Bernard, C., *et al.* (2021) Evaluation of Neurosurgical Training of French Military Surgeons Prior to Their Deployment. *Neurochirurgie*, **67**, 454-460. https://doi.org/10.1016/j.neuchi.2021.03.005

[12] Staudt, A., Suresh, M., Gurney, J., Trevino, J., Valdez-Delgado, K., VanFosson, C., *et al.* (2020) Forward Surgical Team Procedural Burden and Non-Operative Interventions by the U.S. Military Trauma System in Afghanistan, 2008-2014. *Military Medicine*, **185**, e759-e767. https://doi.org/10.1093/milmed/usz402

[13] Lesperance, R.N., Adamson, S. and Gurney, J.M. (2021) Lessons Learned during Prolonged Care of Combat Casualties by a Minimally Manned Surgical Team. *Military Medicine*, usab299. https://doi.org/10.1093/milmed/usab299

[14] Swiech, A., de Rocquigny, G., Martinez, T., Loarer, G., Vico, S., Planchon, J., *et al.* (2020) Terrorist Threat: Creating a Nationwide Damage Control Training Program for Non-Trauma Care Providers. *Anaesthesia Critical Care & Pain Medicine*, **39**, 59-64. https://doi.org/10.1016/j.accpm.2019.09.011

[15] Tsifetakis, E. and Kontogiannis, T. (2019) Evaluating Non-Technical Skills and Mission Essential Competencies of Pilots in Military Aviation Environments. *Ergonomics*, **62**, 204-218. https://doi.org/10.1080/00140139.2017.1332393

[16] Mercer, S., Khan, M., Scott, T., Matthews, J., Henning, D. and Stapley, S. (2017) Human Factors in Contingency Operations. *Journal of the Royal Army Medical Corps*, **163**, 78-83. https://doi.org/10.1136/jramc-2016-000658