

The New Requirement of the Development of Weapons and Equipment to the Quality of Military Talents

Nan Men, Zhibing Pang, Pengdong Zhang, Shuai Mu,
Zhaofeng Luo and Ming Kong

Abstract *The purpose* through the research in the future weapons development tendency and military professional's necessary quality, and lay a theoretical foundation for cultivating integrated new military talents. *The method* by applying the basic theory and analytical method of Man–Machine–Environment System Engineering, consults the documentation and correlation data, carries on the summary to the new request that the military professional quality set to the future weapons development tendency. *The result* the weapons' development presents the informational, unmanned, intelligent and stealth tendency and sets the new request in the physical ability, skill and intelligence to the military professional. *The conclusion* in order to adapt to the needs of the future high-tech local war and to meet the challenge of the informationization, unmanned, intelligent, stealth military weapons and equipment, we must create a new type of integrated military personnel.

Keywords Development of weapons and equipment · Tendency · Quality · Integration

1 Introduction

Published in May 2015 white paper on “China’s military strategy” clearly pointed out: The world revolution in military affairs (RMA) is proceeding to a new stage. Long-range, precise, smart, stealthy and unmanned weapons and equipment are becoming increasingly sophisticated. Outer space and cyber space have become new commanding heights in strategic competition among all parties. The form of war is accelerating its evolution to informationization [1]. This is the forecast and basic assessment of the development characteristic of weapon equipment of world in current and future certain time. With the development of weapons and equipment

N. Men (✉) · Z. Pang · P. Zhang · S. Mu · Z. Luo · M. Kong
Air Defense Forces Academy, Zhengzhou 450052, China
e-mail: fkb_mmes@163.com

© Springer Nature Singapore Pte Ltd. 2018
S. Long and B.S. Dhillon (eds.), *Man–Machine–Environment System Engineering*,
Lecture Notes in Electrical Engineering 456, DOI 10.1007/978-981-10-6232-2_15

that presents a new trend, the quality of military personnel also put forward new requirements. The cultivation of new military talents should focus on enhancing physical ability, improving skills and developing intelligence.

2 New Tendency of Development of the Weapons and Equipment

2.1 Informationization

With the application of information technology in weapons and equipment, its high degree of integration and extensive penetration of the characteristics of weapons and equipment increase the tactical technical performance and combat effectiveness unprecedented, resulting in the improvement and research of weapons and equipment use information technology increasingly, and the development of weapons and equipment has shown a general tendency of information.

Modern main battle platform, precision-guided weapons, space warfare weapons and other equipment have been equipped with a large number of information technology devices, such as satellite positioning navigation equipment, fire control systems and electronic countermeasure devices. And with the development and application of cloud computing and Internet of Things and other emerging information technology, combat equipment or support equipment will further improve its tactical technical performance, making weapons and equipment more and more information, so that make big influence on the future war.

2.2 Unmanned

With the rapid development of military high-tech, on the one hand makes the war attack more accurate, the war conditions more cruel, the combat operations more dangerous, on the other hand also strongly promote the development of unmanned combat platform, may say that the unmanned combat platform conform to the need of development of future war.

In the future high-tech battlefield, with the gradual improvement in the ability of the precise strike, long-range engagement and mass destruction, there will be more and more professional soldiers, especially those who bear the dangerous and heavy, complicated and hard mission and will shift from the combat to the front of computer terminal; in some cases, the traditional task completed by the warfighters can be borne by the unmanned system, the needs of the development of war form, and support provided by scientific basis is bound to keep this trend becoming a reality rapidly [2]. At the same time, unmanned combat platform without casualties, a high degree of integration of technology, low life-cycle cost and other advantages, as well as the fast-growing strong driving force and inner drive.

2.3 *Intelligent*

With the use of information technology as the core of high-tech applications in the military field, weapons and equipment have gradually become the agent which, as a core of artificial intelligence, can automatically search, identify, track, judge and destroy the target, and present the intelligent trend gradually.

Intellectualization of weapons and equipment through the weapons system with those who have a similar person's senses organ (various sensors), the central nervous (information data transmission equipment), the brain (automatic command and control system) and limbs (in a variety of missile-borne, vehicle-mounted, airborne, shipboard man-machine combination structure of precision strike weapon) and other components of the multi-integrated weapons system to achieve [3]. Intelligent embodied in three aspects: the battlefield perception, intelligent decision-making and precision strike of the weapons and equipment. Intelligent precision-guided weapons can carry out their own combat mission planning, automatic discovery and identification of targets and automatically select the attack path and implement combat.

2.4 *Stealth*

Due to the development of radar technology, the battlefield transparency enhances unprecedentedly, the penetration and attack are even more difficult, and therefore the weaponry stealth technology obtains development unprecedentedly. As an effective means to improve the survival, penetration, especially the deep strike capability of the weapon system, it has become the most important and effective tactical technique in the six-dimensional modern warfare of land, sea, air, sky, electricity and magnetism [4].

In recent years, infrared stealth, radar stealth, visible stealth and other stealth technology have been widely used in aircraft, missiles, ships and other existing weapons and equipment improvements and the development of new weapons. At the same time, low RCS shape technology, radar absorbing materials, plasma technology and other modern stealth means develop rapidly toward the "thin, wide, light, strong" direction [5]. New stealth mechanism and technical means and the development of new stealth materials will bring a breakthrough in the development of stealth technology.

3 New Requirement of the Quality of Military Talents

Modern war shows not only the material force confrontation, but also a contest of human physical ability, skills and intelligence.

3.1 Enhance Physical Ability and Lay the Foundation of Talent Quality

Physical ability is the general level of physical quality, is the basic support of military combat winning mechanism and is the basis of modern military quality [6].

Physical ability has six elements, including cardiovascular endurance, muscle strength and endurance, flexibility, agility, strength and balance. For the military, the physical ability combine with combat missions, tactical background and battlefield environment, enhancing the military physical ability should highlight the specific on the basis of the six elements, and carry out closely with actual combat.

Looking back on the history of human war, physical ability has always played a vital role as a constant component of combat effectiveness. In cold weapons era, physical ability is the core elements of combat effectiveness, the way of transformation from physical ability to combat effectiveness is direct, the process is simple, the effect is obvious, and physical ability determines the operational capacity of an army. Under the condition of modern information warfare, with the increase in heavy load of individual soldier, expansion of battlefield space, upgrade of fighting and killing, increase of war rhythm, refined division of labor of the arm of the services, the requirements of military physical ability get higher and higher, the physical ability is still the important basis essential factor of combat effectiveness [7].

3.2 Improve the Skills and Consolidate the Quality of Talent

Military skills are the main body of overall development of modern military comprehensive quality, are the necessary skills and ability of serviceman who apply knowledge and experience to complete a task in the military activities and are a comprehensive embodiment of mental skills and action skills [6, p 238].

Military skills consist of two parts, the tactical and technical skill. Tactics include tactical thinking and tactical implementation. Technology includes the theoretical knowledge and operation of weapons and equipment.

With the rapid development of information technology and artificial intelligence, the trend of weapon equipment development is more obvious, but the master of these weapons is always people, and people in the modern war still plays a key role about the success or failure of the war. Even if the weapons and equipment how advanced, if we want to control high-tech war, the key and fundamental is improve the operation and command skills of military and the ability to adapt to weapons and equipment.

3.3 Develop Intelligence and Strengthen the Core of the Quality of Talent

Intelligence is relative to the physical ability and skills and refers to learning, memory, thinking, understanding of objective things and the ability to solve practical problems [8]. Intelligence is the integrated embodiment of its knowledge, intelligence and talent and is the core of modern military qualities.

Intelligent military professional has the following several essential factors: courageous judgment ability, scientific thinking ability, keen insight, clever strategy ability, strong cohesion, nimble handling ability, fast adaptiveness, excellent operational command capability, decisive decision-making ability, super foresight ability, strong communication ability, wise coordination ability, exuberant innovation capabilities as well as the highly effective memory.

Future high-tech war is a war that the knowledgeable serviceman uses weapons and equipment and network command and control means, and one of the important characteristics is intelligence against becoming an operational style that relates to success or failure of war [6, p 238]. The traditional wisdom must combine with the new technology, promote each other and give each other new vitality, only then achieve the organic combination of both, can shorten the technical gap between the enemy and achieve the purpose of victory.

4 Conclusions

In short, in order to adapt to the needs of the future high-tech local war and to meet the challenge of the informationization, unmanned, intelligent, stealth military weapons and equipment, we must create a new type of integrated military personnel. In the integration of development, physical ability is the foundation, skills are the main body, intellectual is the core, the three have different contents and interaction and complement each other. The coordinated development of physical ability, skill and intelligence is the direction of our military's high-quality personnel training. It is consistent with the development of the whole national education in the direction of totalization and integration. Only by cultivating such integrated military personnel can we adapt to the national and military modernization construction and future war's need [6, p 239–240].

References

1. State Council Information Office (2015) China's military strategy. People's Publishing House, Beijing
2. Guo S (2011) Unmanned war. National Defense University Press, Beijing, p 02

3. Henggang J (2015) Future development trend of combat weapon intelligence. *Natl Def Sci Technol* 11:27–30
4. Zhang J, Sun J (2012) Application and development analysis of foreign stealth technology. *Ship Electron Eng* 04:18–21
5. Zhang H, Jiang W (2016) The development of modern stealth technology. *Electron Technol* 29(03):194–197
6. Pang Z (2006) The history of war in humanistic vision. People's Liberation Army Publishing House, Beijing, p 273
7. Chen Y (2013) Physical training and enlightenment of american and russian army. *J Mil Sports* 32(03):23–26
8. Xu Y, Wang Z, Yu Y (2001) The new military command talent intelligence factors theory. The Yellow Press, Jinan