



BIOMEDICAL ENHANCEMENT : ISSUES AND CHALLENGES

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ABSTRACT Science and technology have greatly advanced our fighting capabilities. In spite of possessing the most lethal and developed armamentarium, the best of the world armies have to rely on the soldier fighting in the battle zone. They happen to be the weakest link. Hunger, fatigue, emotions, adrenaline and “fog of war” can seriously hamper his decision making and physical capabilities. These factors can seriously jeopardize the success of any military operation. Every successful army of the world has bred their own cadre of physically and mentally superior soldiers called Special Forces. Across the globe these special force conduct operations as a small autonomous group, mostly in urban setting. They execute their work with surgical precision inflicting maximum damage to their enemies while causing minimal damage to self or the unsuspecting civilians. America and its modern allies have undertaken various projects to strengthen the bodies and minds of its personnel so as to create the super soldier. In order to keep pace with modern warfare other countries too are following suit. The race for creating the Enhanced Soldier has begun. In order to continue its war on terror there is need for soldier who is independent, network integrated, more lethal and endowed with physiological reserves that empower him to deliver peak performance for a longer duration as compared to his unenhanced counterpart. This paper attempts to define biomedical enhancement, its advantages, risks and challenges. In the ultimate analysis, it's evident that India has no option but to rise up to this challenge and devise its own policy and guidelines. Issues of morality and ethics need to be restructured accordingly.

KEYWORDS : Biomedical Enhancement

Introduction

Eric Juengst in 1998 defined Biomedical Enhancement as: an enhancement is a medical or biological intervention introduced into the body designed “to improve performance, appearance, or capability besides what is necessary to achieve, sustain or restore health” [1].

Since World War II, lot of debate has unfolded about the ethical, legal and social implications of military human enhancement, due in part to Adolf Hitler's war on the “genetically unfit” and the United States military's experimentation with psychedelic drugs such as LSD. The issue has been simmering since 1940. The last two decades have seen a paradigm shift in the dynamics of battlefield. Two major changes have occurred. Firstly recent wars have become asymmetric. It means war and armed conflicts are no more fought between two states, instead they are being fought between state and some non-state terror group. Secondly medical technology in modern warfare has shifted focus on making stronger, smarter and sturdier soldiers who can better survive the dangers of battle field.

Fear and confusion in the “fog of war” can lead to costly mistakes, such as friendly-fire casualties. An otherwise-sane soldier may end up performing vicious acts under stress or due to emotional outbursts. The spectrum can include verbal abuse of local civilians or torture or even illegal executions. These incidents can make an international incident destabilizing relations between countries. Post-traumatic stress can take a devastating toll on individual and families and add pressure on health services.

The U.S. Defense Advanced Research Projects Agency Slogan which proclaims, “be all that you can be and a whole lot more”, clearly amplifies their current policy on military enhancement. The military futurists believe that in order to win the “War on Terror”, military superpowers need a new type of soldier that is independent, network-integrated, and more lethal than ever before. Patterns of public risk perception, military expenditure, and new technological developments suggest that it is time that India takes cognizance and starts acting before its too late.

Across the world we are now seeing the development of ways of warfare which involve large numbers of “special forces” being deployed in relatively small, relatively autonomous groups, to prosecute operations in urban settings where the possibility of civilian harm is high. In such scenarios identification of targets is difficult recognizing enemy combatants is frequently not possible. The psychological and physical stress on individual combatants under fire is consequently high. The focus is on individual combatants rather than mass forces. Therefore the need to depend on enhancements of individual capabilities grows as these enhancements make this type of

combat more effective. What one realizes is that modern warfare hardwires technology, soldiers capability, strategy and military ethos all into a single unit.

The incorporation of these technologies into the soldier's bodies may have a temporary or a long term effect. It may include pharmaceuticals or surgically implanted or genetically engineered modifications. The effect may not only affect their physicality but can alter their personality. Hence the hard-wiring of the strategy and technology could operate at every level from bodily cell to theatre of war.

Past experiences have shown that the US military is usually on the cutting-edge of science and technology research. They have provided the society and world innovations like the Internet, global positioning system (GPS), radar, microwaves, and even the modern computer. Its military is making substantial investments to develop technologies that would enhance the ability of warfighters to complete their missions safely and effectively. Driven by neuroscience, biotechnology, nanotechnology, robotics, and other emerging technologies, this research includes combating sleep deprivation, improving cognitive performance, increasing strength, reducing muscle fatigue, and other enhancements to the human body and mind. Although research in these fields is going on at break neck speed, the risks, ethics and policy issues are yet to be set in place.

There is research going on to employ genomic technologies to enhance medical status and improve treatment outcomes. The US proposes to enhance health, readiness, and performance of military personnel. It will also make it possible to know the genetic identities of an adversary. This kind of research can impact the offensive or defensive military operations. Which direction it takes, remains to be seen.

Enhancement vs Disenhancement

Drugs are under development that can selectively target and erase memories (Lehrer 2012). This would have beneficial uses, such as removing tragic memories that cause warfighters to have post-traumatic stress disorder (PTSD) to live normally without paralyzing fear. That is, their lives would be enhanced by the degradation of their painful memories.

Enhancement vs Human engineering

One person's superhuman is another's Frankenstein's monster (Galliot 2013). This, then, raises another issue in terminology: that we perhaps ought to use the more neutral “human engineering” rather than value-laden “human enhancement” (Allhoff et al. 2010a). That is, “enhancement” seems to imply a net benefit to the individual, for instance, resulting in increased endurance, greater concentration, or some other desired good.

Military Variables

Warfighters engaged in direct combat might be more willing to take risky enhancements than service personnel or operators of drones and other remote weapons. Special-operations personnel in particular are known to be risk-takers, including in the area of increasing their mission effectiveness, such as by intense training. This might make it necessary to protect them from voluntarily agreeing to take potentially dangerous enhancements. On the other hand, if these troops are sent on more dangerous missions than regular troops, their willingness to take greater risks to improve their performance would be understandable, and this could be reason for treating them differently. However, caution should be exercised in policy choices that create class divisions—for instance, special treatment or different rewards—within a military, to the extent they cause dissension in the ranks.

Advantages

1. Decreased combat force size

Presently India has the second largest Army in world. Keeping in line with the conventional rules of war, biomedical enhancement will help in reducing the troop size. The most obvious example of this occurs in just war theory, a moral framework for war that originated over 2000 years ago in which proportionality is a crucial moral principle both ad bellum (before combat) and in bello (during combat)[2]. The most obvious harm in war is the widespread loss of life to both combatants and non-combatants; these deaths need to be weighed against any anticipated benefits and shown to be acceptable costs before a war can be considered justified[3]. Hence, if the anticipated combatant deaths were fewer, this would increase the possibility of achieving proportionate conflict. The implementation of reduction of force size has to be done in a gradual manner. The soldiers becoming redundant also need to be reintegrated into the society.

2. Enhanced decision-making

In the United States (US) Air Force pilots are provided with modafinil, a drug that enhances alertness and focus and allows a person to function for up to 60 hours without sleep [4]. If advances in psychopharmacology can be used to alter a person's level of alertness, then similar kinds of intervention may improve decision-making in a way that produces ethically desirable outcomes.

3. Protection of Non combatants and civilians

The opportunities presented by enhancement are not aimed at improving the moral character of soldiers, but rather at their ability to comprehend complex situations and reach ethical judgements quickly, as well as their ability to control emotional responses that may make ethical judgements more difficult.

4. Control of berserk behavior

It is plausible to assume that the visceral reaction to seeing the death of a person who is not merely a colleague but also a brother or sister-in-arms would result in overpowering feelings of hatred, diminished empathy or aggression that ideally would not be in the psychological make-up of military professionals.

Military enhancement, autonomy and consent

An important question that the army would need to clearly address and then communicate to existing personnel and new recruits alike is whether undertaking enhancements that affect emotional responses will be mandatory or voluntary. There are merits to each position

Military enhancements: Challenges

1. Resort to war

With minimal mortality and restricted war zone the threshold for resorting to military means might be on the rise. Of course it can be argued that with enhanced decision making resort to war may be used as the last option.

2. Challenges to core army values

The ethos of Indian Army revolves round physical and moral courage. The use of enhanced soldiers must be only against similarly enhanced soldiers. There is a fear that their deployment may be done to gain tactical advantage over an unenhanced enemy. There lies a further risk of developing a culture of resentment, and disconnection between enhanced and unenhanced soldiers which prove a hurdle against teamwork.

3. Legal Challenges

There is some debate as to whether the enhanced warfighter might be

classified as a weapon under international law, and therefore be subject not only to Law of armed conflict (LOAC) as a human agent, but also to weapons review subject to Article 36 of the Geneva Conventions [5]. If warfighters are also classified as weapons, there are real difficulties in assigning moral or legal culpability to their actions.

4. Treatment of enhanced veterans

Veterans from armed forces are already facing difficulties reintegrating with civilian society. The enhanced veteran stands a more serious risk [6,7,8]. The solution lies in providing extensive psychological and family support for enhanced personnel and undertaking measure under the aegis of resettlement cell in providing them ongoing gainful employment within the military where possible.

Conclusion

Military enhancement provides a range of opportunities for the army to pursue not only military, but ethical goals. These enhancements may also provide increased adherence to the ethical principles that govern armed conflict. However, this also gives rise to a range of ethical challenges, several of which do not attract easy answers.

In biomedical engineering manipulation of physicality and minds of human beings is an uncharted territory of research. Very little is known about its long term effect. Moreover no two humans are similar. Our personalities are different and unpredictable. Biological engineering reveals that side of science and engineering which isn't precisely defined. It falls outside the boundaries of absolute laws and truths. The answer to the numerous issues fall outside the realm of Science and Engineering.

Whether it will prove beneficial in the long run is not clear. But what is clear with the current body of literature is that India needs to start enhancing its warfighters so that the battle field of future remains a level playing field.

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