For the past decades there have been many issues regarding body armor. This document will focus on the major improvements that have been seen in body armor technology in recent years. We will focus on the latest materials been used to make body armor’s as well as take a look at the latest designs. We will also touch on the different types of body armor available as well as see how far body armor has come in recent years.

## Problem Statement

One of the major issues the army personal as well as law enforcement have faced over the years with body armor has been the huge amount of extra weight that one has to carry when wearing body armor. Unfortunately, major advancements could not be made in the past decades as ensuring that the body armor would remain effective by reducing the amount of fatalities and decreasing the weight would come at a significantly high cost. It would have simply been not cost effective to reduce the weight of the body armor at that time.

### Background

For the past decade the race to decrease the heaviness of body armor as well as ensuring a comfortable fit had been on, whilst ensuring that the final product would be cost effective. In recent years scientist had discovered new materials which would allow for much lighter and more comfortable body armor at a cost-effective price. One of the most important concepts to grasp when aiming to achieve a lightweight body armor is having materials which will allow for the maximum amount of energy to be absorbed and at the same time trying to ensure that there is an extremely low amount of low energy absorbing materials contained in the body armor. Amazingly over the last few years the discovery of Ultra-High Molecular Weight Polyethylene (UHMWPE) materials has allowed for major innovations and changes to be made to the body armor technology industry. This has allowed for major advancements in the body armor which army personal and law enforcement wear, making it much more conducive and effective. It is important to note that the safety and effectiveness have to be maintained at all times and remain the number one priority when designing lightweight body armor.

### Solutions and Recommendations

As previously noted, one of the main solutions to attaining a lighter and cost-effective body armor was the discovery of Ultra-High Molecular Weight Polyethylene (UHMWPE) materials. It is important to emphasize that Hard Armor Plate body armor has seen the most amount of significant changes. Ultra-High Molecular Weight Polyethylene (UHMWPE) has also led to a significant amount of protection against lead-filled and gentle steel cored ammo. Ultra-High Molecular Weight Polyethylene (UHMWPE) has also made a significant impact on the fit and comfort of body armor, allowing body armor to have multiple designs and also giving rise to multiple accessory compartments- for example allowing body armor to have a handgun compartment.