Clothing Comfort, Health and Wellness in General Duty Police Load Bearing Vests from 2008 to present day.

Novel development possibilities in advanced textiles and garment design, that can be derived from motorcycle wear and sports wear.

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Certificate of Authorship/Originality

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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who always believed in me and who always wanted the best for me.

Contents

Contents

Contents

List of Figures

Abstract

This research document reveals recent developments in advanced textiles and in technical garment design which may assist in the design development of human load carriage garments. From discussions into human load bearing systems, load bearing garments, advanced textiles for comfort, health and wellness derived from motorcycle and sportswear, reviewers will learn that there are a multitude of novel possibilities available to assist them in the development of future load bearing vests for Police Officers and Emergency Service Personnel.

Motorcycle wear is generally well advanced in terms of providing high levels of user protection aimed towards reducing injury and improving user health and wellness through enhancing factors such as climate control (breathability) and increased movement. Through the use of advanced textiles in modern motorcycle wear and by the way in which these garments are constructed structurally, they provide a much higher level of protection than what was previously available to motorcyclists. Likewise, sportswear has increasing become more high-tech, as athletes have demanded so much more of the garments they use. Increasing performance characteristics such as improving climate control for example, can significantly enhance user performance, health and wellbeing. This research document further explores motorcycle wear and sportswear as being relevant areas of garment design that may assist in informing load bearing vest design.

Glossary of Terms

3D Three dimensional
ABS Australian Bureau of Statistics
APPOINTMENTS Terminology that NSW police use to describe the equipment that they carry such as handcuffs, their pistol etc.
BACKPACK Another term used for a rucksack, or a haversack.
BOBBY Colloquial term for a police officer from Great Britain.
CAPSICUM SPRAY/PEPPER SPRAY An aerosol spray containing oils derived from cayenne pepper, irritating to the eyes and respiratory passages and used as a disabling weapon. This term is used in Australia only.
COMPOSITE TEXTILE Is defined as a combination of two or more materials (reinforcing elements, fillers, and composite matrix binder), differing in form or composition on a macro scale. The constituents retain their identities, that is, they do not dissolve or merge completely into one another although they act in concert.
CORDURA A material
DUTY BELT The belt that a police officer uses to carry equipment
EQUIPMENT BELT Another name for a duty belt.
GPS which stands for Global Positioning System, is a radio navigation system that allows land, sea, and airborne users to determine their exact location.
LBV Load Bearing Vest
LOAD CARRIAGE The act of humans conveying; carrying load.
NSW New South Wales
NSWPF New South Wales Police Force
HWP Highway patrol
INTERFET International Force for East Timor
MNVG Monocular Night Vision Goggles

NMI neuromuscular incapacitation; when you apply a high-voltage, low-amperage electric charge to muscle tissue, it's as if you're overloading its communication system. Taser's electric pulses cause affected muscles to contract up to nineteen times per second. Under normal conditions, your body moves by relaxing one set of muscles while contracting another. But if an electronic pulse hits your body, both sets of muscles may try to contract at the same time. Generally speaking, the stronger muscles win out. But because the pulses override the commands from your brain, you have no conscious ability to control their movements. As a result, the affected area of your body will tense up as the surrounding muscles contract. You may lose your balance and fall. Depending upon where you've been hit, you may not be able to break your fall or catch yourself. That's why people who have been hit by a Taser sometimes suffer superficial cuts, bumps and bruises.

LAC New South Wales Police term for a Local area command

LOAD BEARING PLATFORM Another term for a Load Bearing Vest (LBV).

LOAD BEARING SYSTEM Another name for a Load Bearing Vest (LBV).

LOAD CARRIAGE SYSTEM Another term for a Load Bearing Vest (LBV).

OC SPRAY An aerosol spray containing oils derived from cayenne pepper, irritating to the eyes and respiratory passages and used as a disabling weapon.

OH&S Occupational Health & Safety, sometimes known as

PEPPER SPRAY/CAPSICUM An aerosol spray containing oils derived from cayenne pepper, irritating to the eyes and respiratory passages and used as a disabling weapon.

PCM A phase-change material (PCM/Phase Change Textile) is a substance with a high heat of fusion which, melting and solidifying at a certain temperature, is capable of storing and releasing large amounts of energy. Heat is absorbed or released when the material changes from solid to liquid and vice versa; thus, PCMs are classified as latent heat storage (LHS) units.

RUCKSACK Another term used for a backpack, or a haversack.

SA Situational Awareness is the perception of environmental elements with respect to time and/or space, the comprehension of their meaning, and the projection of their status after some variable has changed, such as time.

SOPs Standard operating procedures

STANO Soldier surveillance, Target Acquisition and Night Observation

TASER Electronic control device. A taser is an electroshock weapon sold by Taser International. It uses electrical current to disrupt voluntary control of muscles causing neuromuscular incapacitation (NMI) - see neuromuscular incapacitation NMI.

TRANSPORT PHYSICAL OBJECT Backpack or rucksack

TWS Thermal Weapon Sights

UAV Unmanned Aerial Vehicle

WORKCOVER An organisation in Australia that administers and controls workers compensation.