RCMP Skill Retention and Perishability Literature Review

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Contents

Executive Summary

COR&D conducted a literature review, on behalf of the RCMP, to determine the impact of stress on police skills, and to review research on the skill retention and perishability of the following police skills:

- ✓ First Aid/CPR
- ✓ PARE
- ✓ PC4 Gas Mask
- ✓ Carotid Hold
- ✓ Oleoresin Capsicum (OC) Spray
- ✓ Baton
- ✓ Conducted Energy Weapon (CEW)
- ✓ Immediate Action Rapid Deployment (IARD)
- ✓ Firearms (Pistol, Shotgun, Rifle)

Literature on the impact of stress on cognitive, affective and psychomotor skills was reviewed. Task performance is affected by many different factors while individuals are experiencing stress. Chemical reactions in the body prepare individuals for survival, perceptions of all the senses are altered, and memory is impaired.

The occupation of a police officer has been ranked as the second most stressful occupation in North America, only behind an inner-city school teacher (Centers for Disease Control and Prevention, 2006). Evidence exists to suggest that increased stress can indeed affect officer performance. Officers implementing skills directly related to policing (e.g., baton, pepper spray, handcuffing) have shown a decrease in efficiency when placed in a stress-inducing situation.

"As with all psychomotor skills, those that are not used consistently will deteriorate over time, and those motor skills which are more complex will deteriorate more quickly" (Hall & Butler, 2007). The old adage "use it or lose it" pertains to many of the skills police officers use on a frequent and infrequent basis within their normal work day. RCMP officers are required to constantly update and refresh their training so that when a certain skill is needed, their training and experience will support them. However, many of the timelines for how frequently officers should refresh their skills are based on historical requirements rather than empirical evidence.

Regular recertification and refresher training for the hard police skills are required throughout an officer's career. An overview of each police skill is provided, including a summary of jurisdictional recertification strategies/requirements and the policy/literature to support them.

In reviewing the perishable skills, the need for ongoing training and recertification is clear in all of the literature and anecdotal information.

1. **First Aid** and **CPR** certification is required for an individual to begin policing. These skills can begin to deteriorate quickly after training (Einspruch, Lynch, Aufderheide, Nichol & Becker, 2007; Mahony, Griffiths, Larsen & Powell, 2008; Wynne, 1986). It is recommended that these skills are recertified a minimum of once every year, and that mannequin practice is acquired throughout the year, if possible.

2. The **PARE** has been identified as a strong example of a well functioning occupational fitness test (Bonneau & Brown, 1995). The maintenance of physical fitness is recommended to avoid injuries and ensure officers are successful in their work. The research supports its use for new recruits and as a periodic assessment of health.
3. The literature on the **PC4 Gas Mask** supports the RCMP's current practice of an annual recertification course/re-fit.
4. Research on the need for recertification in the use of the **carotid hold** is inconclusive except to state that it should be thorough and ongoing. Other jurisdictions recertification timelines vary from annually to every 3 years.
5. Research on the need for recertification in the use of **OC Spray** is inconclusive except to state that it should be thorough and ongoing. Other jurisdictions recertification timelines vary from annually to every 3 years.
6. Research on the need for recertification in the use of the **baton** is inconclusive except to state that it should be thorough and ongoing. Other jurisdictions recertification timelines vary from annually to every 3 years.
7. Although there is little research on how quickly **CEW** skills decay, a review of the recertification requirements of other jurisdictions supports the RCMP's current practice of annual recertification.
8. The literature on **IARD** is scarce, but it does support the RCMP's current practice of annual recertification.
9. The literature on the need for recertification in the use of **firearms** (pistol, shotgun, and rifle) points to a 6 month recertification period. Firearms training should be aimed at recreating realistic scenarios and should include increased movement while shooting as well as aspects designed to increase stress levels in the shooter.
10. Although several of the above skills occur within situations of increased stress, all hard skill recertification should utilize training situations which increase participant stress levels.

How often these skills need to be refreshed can be a matter of preference and debate, but the necessity of recertification is well established. Research clearly indicates that police officer "training should be realistic, must be tailored to the experiences and needs of the officers, and must be delivered on a continuous, regular basis" (McEwen, 1997). Many of the RCMP's current practices are supported in the literature and are consistent with other jurisdictions. There are, however, jurisdictions that require more frequent recertification on certain skills. Further empirical research is warranted in these skills to determine the exact type of training and frequency required.

Introduction

COR&D conducted a literature review, on behalf of the RCMP, to determine the impact of stress on police skills, and to review research on the skill retention and perishability of specific police skills.

The purpose of the project was to:

- ✓ Examine relevant skills perishability research and enhance the understanding of affective, cognitive and motor skills;
- ✓ Inform the development of an evidence-based recertification strategy; and,
- ✓ Support the development of national standards for skills training/maintenance which meet law enforcement and policing needs.

The following research questions guided the project:

1. How does stress impact cognitive, affective and psychomotor abilities?
2. Define the impact upon the acquisition, retention/perishability and maintenance of police skills contained within the scope of the use of force model.

The report covers the following perishable skills:

- ✓ First Aid/CPR
- ✓ PARE
- ✓ PC4 Gas Mask
- ✓ Carotid Hold
- ✓ Oleoresin Capsicum (OC) Spray
- ✓ Baton
- ✓ Conducted Energy Weapon (CEW)
- ✓ Immediate Action Rapid Deployment (IARD)
- ✓ Firearms (Pistol, Shotgun, Rifle)

"As with all psychomotor skills, those that are not used consistently will deteriorate over time, and those motor skills which are more complex will deteriorate more quickly" (Hall & Butler, 2007). The old adage "use it or lose it" pertains to many of the skills police officers use on a frequent and infrequent basis within their normal work day. RCMP officers are required to constantly update and refresh their training so that when a certain skill is needed, their training and experience will support them. However, many of the timelines for how frequently officers should refresh their skills are based on historical requirements rather than empirical evidence.

Many police skills are performed under experiences of stress. For this reason, it is important to understand how stress affects a police officer's ability to perform job tasks. The review provides two topics of study. Prior to providing the literature on perishable skills, the impact of stress on cognitive, affective and psychomotor abilities, and its impact on police, police skills and the use of force in particular, is provided.

Reviewing the need for law enforcement training and recertification is not new. In a 1997 study of 96 law enforcement agencies in the US, the author found that the majority of the reviewed agencies had:

- "a training course in the use of department issued weapons and must be recertified at least once every two years;
- training that discusses how often officers shall be trained, what weapons and tactics they need recertification in, and who is authorized to provide the training."(McEwen, 1997)

The author supported policy development but stressed that follow-up activities by the department were essential. Most police policy papers indicate that "proper training and constant reassessment of the quality of techniques and concepts for evaluating situations prior to the use of any force are crucial" (Synyshyn, 2008). The guidelines for such a reassessment are the function of this literature review.

Stress and its Impact on Cognitive, Affective and Psychomotor Abilities

Humans respond to their environment in a number of different ways, through both their behaviour and involuntary physiological responses. Usually we are able to experience demands in our environment and deal with them accordingly; we use the resources at our disposable to solve problems and overcome obstacles as we face them. This causes little tension and allows us to carry out the activities of our lives with relative ease. However, when we meet obstacles that we cannot surpass, our body is programmed to react to help us survive. In physically threatening situations, these responses can help us. But when more precise tasks need to be carried out, these responses may actually harm performance. The consequence of the reactions made by our bodies is known as stress.

When environmental demands surpass the resources that we possess to cope with them, changes are evoked in the physiological, emotional, cognitive, and social aspects of our normal behaviour (Driskell & Johnston, 1998). These changes are important to understand because they aid in determining how we will act under stress. "Evidence indicates that stress is a costly health-related issue, in terms of individual performance" (Driskell & Johnston, 1998). For individuals who are employed in work environments that typically deal with high stress situations, these reactions become even more important because they have been related to a decrease in task performance.

The most typically thought of symptoms of stress are the physiological consequences of stress. They include increased heart rate, higher blood pressure, increased perspiration, laboured breathing, trembling or shaking, and increased muscle tension (Driskell & Johnston, 1998; Honig & Lewinski, 2008). Anxiety is increased, and has been shown to significantly decrease an individual's ability to perform tasks (Nieuwenhuys, Caljouw, Leijsen, Schmeits & Oudejans, 2009). The physiological responses are caused by the activation of the sympathetic nervous system in individuals in stressful environments. This activation causes the release of neurotransmitters in the brain, the most prevalent of which are adrenaline and hydrocortisone (Fechir, Gamer, Blasius, Bauermann, Briemhorst, Schlindwein, et al., 2010; Honig & Lewinski, 2008). The release of these chemicals into the brain readies the body for a

reaction to the oncoming threat. This response has been coined 'the flight or fight response'. The 'fight or flight response' is considered to be a primitive survival mechanism through which we choose to fight, flee or freeze when encountered with a physical threat.

During the 'fight or flight response', the body prepares itself for physical action by focusing its energy supply to different parts of the body. Blood flow is increased into the large muscle groups in the body (Honig & Lewinski, 2008). This allows the large muscles to be more prepared and efficient during use. The increased efficiency readies the body for the acts of running or hand to hand combat. However, with the increased blood flow to the large muscles comes decreased blood flow to the fine muscle groups. This deprives us of the ability to execute fine motor movements at their usual level of skill. Fine motor skills that lose some of their normal support include hand-eye coordination. In addition to the lack of support for fine movements, the brain focuses on the most important information in the environment. Therefore, if there is a threat that is visually present in the environment, the brain will focus on that one stimulus and neglect other stimuli.

The focusing of the brain on specific stimuli has been termed *inattentional blindness*, which is an example of the brain narrowing the attention to the environment (Driskell & Johnston, 1998; Honig & Lewinski, 2008). This phenomenon is meant to provide as much attention to the threat as possible. By focusing so much energy on the threat when we are under stress, we are more able to track the movements and block out stimuli (such as background noise and other movement) that could distract us, and, in turn, take attention off the present obstacle. While this can help deal with the target hazard, it can have a negative effect on performance if the environment suddenly changes. Being so focused on one threat means that if another type of threat enters the environment, it will not be immediately noticed or attended to. In addition to increasing attention to the hazard, the way in which visual information is processed also changes. Information that is present in the center of the visual field is attended to more. This causes a decrease in the processing of information that is present in the fields of peripheral vision. While *inattentional blindness* refers to the narrowing of visual attention under the stress, the same narrowing of attention occurs across the other senses as well.

In addition to the reactions of the body and the narrowing of attention during a stressful situation, the perceptions and memories of individuals are also altered under stressful circumstances. The effects of stress on perception cause individuals to "choke" under pressure and perform tasks under their usual skill level (Nieuwenhuys et al., 2009). In stressful situations where the body is primed for survival, the brain changes its functioning to react to stimuli rather than high process thinking (Honig & Lewinski, 2008). This affects task performance if the necessary actions are not natural reactions. The brain forces individuals to react in such a way that they are removed from danger as quickly as possible. However this may not align with the task they are trying to carry out. When this happens, performing the task successfully becomes more difficult due to the stress response of the body; natural reactions must first be overcome and then the task must be performed, despite the difference in the body's functioning. The brain must process and separate the competing information before an individual can make a

decision on a course of action. "Distractions increase cognitive processing and, hence, reaction time by forcing an officer to discern the essential from the unimportant" (Honig & Lewinski, 2008). During stressful situations, the memories of individuals are also affected (Honig & Lewinski, 2008). Memories of the events that passed during the stressful time become impaired, and it becomes more difficult to remember information about task performance.

Task performance is affected by many different factors while individuals are experiencing stress. Chemical reactions in the body prepare individuals for survival, perceptions of all the senses are altered, and memory is impaired. In order to successfully complete tasks under stress, steps are taken to combat the opposing instincts and reactions of the body. Stress caused as a reaction to an environment is lessened when people are less surprised by what they face. Providing information to individuals before they enter a stressful environment helps to reduce the stress they experience once they are in the real life situation (Niewenhuys et al., 2009). When the stress response is decreased, the negative effects on task performance also decrease. "Providing knowledge about stress effects during training has several beneficial consequences" (Driskell & Johnston, 1998). Knowledge allows people to "form accurate expectations", "decrease distraction", and "identify and avoid performance errors" (Driskell & Johnston, 1998). Knowing what to expect from your body during stress allows you to understand how to cope with the changes while they are happening. Over-practice or overlearning has also been shown to decrease the impairment of task performance in stressful situations. Over-practice is the additional practice of a skill that is done after it has already been mastered (Jones, 1989). Although over-practice does not improve the performance of the task in normal situations as the skills have already been mastered, it does improve the retention of the skills during stress.

Impact of Stress on Police, Police Skills and Use of Force

As one of the professions most prone to daily stressors, police officers are highly susceptible to the effects of both physical and mental stress. The occupation of a police officer has been ranked as the second most stressful occupation in North America, only behind an inner-city school teacher, and ranked ahead of other commonly assumed stressful positions including the air traffic controller and stockbroker (Centers for Disease Control and Prevention, 2006). Police officers have been shown to suffer from significantly more frequent and more severe psychological and physical disturbances than the average population (Westernick, 1990).

Impact of Stress on Police

Police are known to experience both physical and psycho-social stressors on the job. One Canadian study involved ride-alongs with police officers from municipal departments in British Columbia (Anderson, Litzenberger, & Plecas, 2002). Using heart rate monitors as a gauge of autonomic nervous system activation, stress reached peak levels during and just prior to critical incidents with a heightened sense of threat involved. Subsequent measurements found that instead of returning to the baseline, the level of stress experiences continued to be significantly elevated through the remainder of the shift. In

addition, officers were found to suffer from anticipatory stress from the simple act of starting their shift. A recent investigation conducted by Gershon, Barocas, Canton, Li, and Vlahov (2009) found that exposure to critical incidents on the job, experiences of workplace discrimination, lack of cooperation evidenced between co-workers, and job dissatisfaction were all positively correlated with the level of perceived stress. In addition, factors associated with shift work, such as a lack of sleep, inconsistent and unhealthy eating habits, and lack of regular exercise, were significantly associated with stress levels (Le Scanff & Taugis, 2002).

There is well documented evidence of the high stress levels experienced on a daily basis by police officers. Researchers have also attempted to discover the exact causes of this stress. The results across numerous studies suggest that the sources of chronic stress can be separated into two main sources: organizational and occupational (e.g., Abdollahi, 2002; Storch & Panzarella, 1996).

- Organizational stressors include a lack of administrative support, the promotion process, inadequate training and/or equipment, excessive paperwork, intra-departmental, and frustrations with the justice system.
- Occupational stressors include those stressors which are fundamental to the profession, such as anticipation of critical incident response, fear of danger, and concerns for one's personal safety (Anderson et al., 2002).

Contrary to prevailing public belief, the stress in policing is not all attributable to the work itself (Gaines & Jermier, 1983). In multiple studies investigating stress among Dutch police officers, organizational stressors were cited as more frequently stressful and more demanding than any other stressors encountered on a regular basis (Kop & Euwema, 2001; Kop, Euwema, & Schaufeli, 1999). As these findings directly contradict the popular belief that the stress is largely attributed to occupational stressors, a limitation of research in this area is evident; occupational hazards continue to be the prevailing focus in the vast majority of police-based research on stress (Abdollahi, 2002).

The organizational stress sources, in combination with occupational stressors, interpersonal milieu, and the personal characteristic of the employee have been shown to play a role in high levels of emotional exhaustion seen within a high stress organization (Gaines & Jermier, 1983). However, police officers, undoubtedly part of a high stress organization, were shown to experience relatively low levels of emotional exhaustion when compared to those in situations of similar stress (Kop at al., 1999). This suggestion of officers having low emotional exhaustion does not suggest that officers do not experience stress; instead, police officers deal with this stress in a manner different than those in other occupations. Officers tend to emotionally detach themselves; consequently, this results in the experience of depersonalization to a far greater extent than other professions (Kop & Euwema, 2001). A key component of police training emphasizes the strict control of emotions (Brown & Grover, 1998). In this respect, police are largely trained to explicitly project a sense of strength and authority with a distinct lack of emotion (Sewell, 1981). In direct relation to this unwillingness to admit emotional weaknesses, police officers use significantly fewer mental health resources than an average citizen (Terry, 1981).

As officers are largely encouraged to control the emotions that regularly result from stress, maladaptive avoidance behaviours aimed at blocking the psychological effect of stress are frequently employed (Anderson et al., 2002); approximately two-thirds of respondents in one police-based study stated they did not feel confident with their own ability to cope with work-related issues in a healthy, constructive manner (Graf, 1986). Studies of various police samples have shown evidence for a high prevalence in nicotine usage (e.g., cigarette smoking) (Burke, 1994), alcohol consumption (Richmond, Wodak, Kehoe & Heather, 1998), divorce (Evans & Coman, 1993), physical isolation (Burke, 1994), and suicide (McCafferty, McCafferty, & McCafferty, 1992) amongst other behaviours in an attempt to cope with stress (Burke, 1994). Work stress is also significantly associated with highly adverse outcomes including, but not limited to, depression and abuse of a romantic partner (Gershon et al., 2009).

One well-studied response to job stressors is the level of self-reported burnout (Burke & Mikkelsen, 2005). Burnout is described as consisting of three separate factors: exhaustion, cynicism, and inefficacy (Maslach, Schaufeli, & Leiter, 2001). In police officers, burnout is associated with a lack of reciprocity between input and output in the relations that officers have with the public, their co-workers, and the overarching organization (Kop et al., 1999).

Impact of Stress on Police Skills

Stress also impacts the tangible skills employed by a police officer; evidence exists to suggest that increased stress can indeed affect performance (Bolger, 1990). The impairment resulting from the stress, however, is far from constant. That is, the decrease observed in skill due to the stress varies widely across individuals, possibly due to personality traits. In particular, officers implementing skills directly related to policing (e.g., baton, pepper spray, handcuffing) have shown a decrease in their efficiency when placed in a stress-inducing situation (Nieuwenhuys et al., 2009). Despite their training and familiarity with many of the arrest and self-defence skills, the performance suffered simply due to the skills being called upon in a high-pressure environment. A similar finding was evidenced in firearm usage, when officer shooting accuracy decreased in a high-pressure situation where the intended targets were shooting back compared to a similar, low-pressure task where the same targets were not returning fire (Oudejans, 2008).

Nieuwenhys et al. (2009) has suggested that psychological factors (e.g., pressure) should be included in training procedures. Stress management, commonly used within sport psychology, can be used as a way to gain increased control over behaviours (Le Scanff & Taugis, 2002). Overlearning, conditions of retrieval, evaluation criteria, and the method of testing can all be modified in training to reduce skill loss over time (Arthur, Bennett, Stanush, & McNelly, 1998). One key to improve mastery over a skill is to ensure that the training involves a high degree of variability within the skill (Stokes, Lai, Holtz, Rigsbee, & Cherrick, 2008). For example, Sloboda (1996) found that having piano students deliberately practice a wide variety of musical pieces substantially improved the mastery of the instrument.

The ways in which stress is intertwined with the role of a police officer are strikingly complex. Stress impacts the day-to-day decision making aspects of the policing profession. In particular, we will now examine the influence of stress on decisions involving the use of force model.

Impact of Stress on the Use of Force

The use of force and the proper application of the use of force model itself can be considered as one of the most important aspects of police work. According to the RCMP website detailing the Incident Management/Intervention model:

> "The IMIM is a visual aid that helps the officer envision an event and explain why certain intervention methods were employed. This is very helpful when an officer must articulate his or her actions, such as before a judicial body. The model is also a teaching aid used for training officers."

This model differs from the American model in that the visual aid depicts the model as a circular process, while Americans use a linear format (Smith, Kaminski, Alpert, Fridell, MacDonald, & Kubu, 2009). Although easily understood, the linear format has been criticized for implying that officers have to move through each step on the continuum until they find a successful option. The circular Canadian Use of Force model represents the range of available options and allows situational factors to dictate which force option will be chosen (Butt & Hall, 2005).

Improper implementation of the model can result in physical harm for the officer and citizens involved, as well as non-physical harms to the governing organizations and the public's perception of the policing profession as a whole (e.g., potential lawsuits, damaging media coverage). It has been estimated that between one and two percent of all police-citizen interactions result in the usage of force (Alpert & Dunham, 2004). Decisions regarding the use of force, whether appropriate or not, are dependent on the level of resistance perceived on the part of the subject (Klukkert, Ohlemacher, & Feltes, 2009).). As stated by Klukkert, Ohlemacher, and Feltes:

> "If an escalating situation cannot be managed either with organizational or personal resources within the scope of the legal framework, and when it is additionally combined with a subjective judgement of an emotional insult, offence, or provocation, then one of three frameworks of justification for police infringements may be activated: an attack on the authority of the state, a lack of respect towards the social role of the police officer, or an attack on the officer's person. In these frameworks, legal aspects are clearly pushed into the background – legality is replaced by justification." (2009, p. 203)

Two particular factors are involved with the use of excessive force: the level of resistance and states of inebriation (Alpert & Dunham, 2004). Increased resistance posed by a subject results in higher response levels from the officer. A subject under the influence of drugs or alcohol is less likely to elicit excessive force from an officer than a sober subject, all other factors being equal.

Researchers have begun to examine the impact of stress on the performance of on-duty officers. One recent article suggests that police recruits appear to rely on their training when faced with stressful situations regardless of their personal characteristics (Le Blanc, Regehr, Jelley, & Barath, 2008). However, this evidence may not be an accurate representation of the entire policing community. The participants in this study consisted of new recruits from an Ontario policing college who were tested during training and under highly controlled circumstances that may not broadly apply to real world scenarios.

Many publications on the topic suggest that on-the-job performance decreases as the pressure, intensity, and stress of the situation increase (e.g., Anton, 2009; Fritz & Sonnentag, 2009; Hourani, Williams, & Kress, 2006; Boswell, Olson-Buchanan, & LePine, 2004). One such study (Nieuwenhuys et al., 2009) found that performance of tasks and skills throughout the use of force (e.g., baton, OC spray, handcuffing) decreased considerably when they were called upon for use in a high pressure situation, regardless of the regularity and familiarity the officer had with said skills. In regards to the general experiences that may result in performance-drop when stress and pressure are added, Le Scanff and Taugis (2002) found that stress results in attentional narrowing and decreases in communication and vigilance.

The level of stress and burnout experienced by an officer has been found to relate to their action on the job, particularly in relation to the use of force model. Burnout is positively correlated to an officer's reported attitude towards the use of force (Kop et al., 1999). In other words, as officer burnout increases, their attitude towards using increasing levels of force on the job becomes more and more positive. High burnout levels are also strongly related to self-reported incidents of the use of force as well as independently observed use of force as emphasized by the following quote from Kop and Euwema (2001, p. 337-8):

> "The results of this study show a relation between burnout and (a more positive attitude to) the use of (self-reported) violence. Few studies so far have investigated the relation between burnout and job performance. This study demonstrates the relevance and importance of doing so. The attitude towards violence explains 27% of the variance by burnout and work experience, with depersonalization and lack of personal accomplishment as strongest predictors. For violent behaviour, 15% of the variance was explained by all three sub-scales of burnout, gender, and work experience."

Positive attitudes towards the use of force are also evident when examining just the cynicism aspect of burnout, as seen in a study of Norwegian officers (Burke & Mikkelsen, 2005). Alternatively, officers showing low levels of burnout and higher measures of professional efficacy held more favourable attitudes in regards to the use of social skills, rather than force, to resolve situations on the job (Burke & Mikkelsen, 2005).

Many police skills are performed under experiences of stress. Research has established that stress affects a police officer's ability to perform job tasks and retain skills. As well, many of the perishable

skills officers are trained in are used in only 1-2% of their regular police work (Alpert & Dunham, 2004). A Canadian study (Butler & Hall, 2008), found that the use of force was rare compared to the number of police-public interactions, occurring only 0.07% of the time. Therefore, the maintenance of these perishable skills comes into question.

Maintenance of Perishable Police Skills

Arthur and colleagues (1998) carried out a meta-analysis of the factors, aside from stress, that influence the decay and retention of various learned skills. As might be expected, a substantial skill loss occurred when the skill in question was not used or practiced over a lengthy period. After more than 365 days of non-use, the average participant was found to perform at less than 92% of their original performance level; in other words, most participants suffered a skill loss of at least 8%. This decrease only grows as the period of non-use grows (Farr, 1987). Cognitive, artificial, and accuracy-based tasks were far more susceptible to skill loss than were those physical, natural, and speed-based tasks (Arthur et al., 1998).

The following is a list of hard police skills that require recertification and refresher training throughout an officer's career. Each section includes a chart of what other jurisdictions require in terms of recertification criteria, as well as a written section of any research or policy to support their recertification timelines.

First Aid/CPR

The following chart shows the frequency of recertification for first aid/CPR among other jurisdictions. Please note that these practices may not be evidence-based. The RCMP requires members to recertify every three years.

Table 1 First Aid/CPR

Jurisdiction	Organization	Standard	Recertification
Canada	RCMP	Standard First Aid & CPR	3 years
Canada	Canadian Red Cross	Standard First Aid & CPR	3 years
USA	American Red Cross	Standard First Aid & CPR/AED	3 years for First Aid Annual for CPR and AED
Great Britain	British Red Cross	Standard First Aid & CPR	3 years
Australia	Australian Red Cross	Standard First Aid & CPR	3 years for First Aid Annual for CPR

First aid and CPR training, as well as the retention of those skills, are vital to police work. During emergencies in which people are seriously injured, police officers are often among the first to respond. Potential officers are not allowed to begin their cadet training until they have valid first aid and CPR certification for children and adults (RCMP, 2009a).

The Canadian Red Cross holds a number of different training sessions on first aid with CPR. The courses provide certification for a period of time, at which point the certification expires and individuals must take a refresher course. Courses are offered through the Canadian Red Cross directly, or, from certain certified organizations such as the St. John Ambulance. The American, British, and Australian Red Cross Agencies offer similar courses in first aid/CPR.

Within the first aid/CPR literature, researchers have tried to determine the retention period after the appropriate acquisition and use of first aid/CPR skills. Researchers have conducted studies to determine how long it takes for life saving skills to deteriorate after training. While many of the studies have shown that skills do deteriorate over time, opinions differ regarding the length of time this takes (Einspruch et al., 2007; Mahony et al., 2008; Wynne, 1986).

The standard first aid and CPR courses provide certification that lasts for three years (Canadian Red Cross, 2010). However, skills have been shown to decrease in less than three years time. In addition to the decrease in skill, there is also a decrease in the confidence of one's ability. In emergency situations, a chance for hesitation or a lack of confidence can create valuable time to be lost for the person in need of medical care. In a study conducted by Mahony et al. (2008), the cabin crew of an airline was tested on their first aid skills. In a self-report questionnaire, none of the crew members reported that they had high confidence in their CPR skills, and a majority of the participants indicated that they had low confidence in their skill level.

Performance of first aid and CPR tasks deteriorates quickly after training. "This is true even six weeks after training, and severe loss of skills occurs after about 12 months" (Wynne, 1986). Researchers found that one year after the time of training, less than 20% of the participants that were originally trained showed the ability to perform basic life support skills. This decrease was larger than the deterioration found in other first aid skills, although the impairment in the other skills was still noticeable during this time frame. Similarly, another study found that after an interval of 2 months, skills deteriorated and affected the successfulness of the performance (Einspruch et al., 2007). After two months, the ability to deliver the appropriate depth of chest compressions during CPR, as well as the ability to use the correct hand placement, had been seriously impaired. The impairment was so great that when trained participants were compared to untrained participants, there was no difference in their performance ability.

Both the general public as well as medically trained professionals have been shown to have severe impairments in skill performance after time passes from their training (Mahony et al., 2008). The degree to which skills deteriorate has been shown to have a relationship to the way in which the training is given as well as the interval between the re-assessment (Mahony et al., 2008). Training is often given in

eight or four hour courses. The eight hour courses have been shown to allow for longer retention of skills (Wynne, 1986). Another important aspect of the course is the amount of practice that is given with the CPR mannequin. The more experience with mannequin practice used for resuscitation training, the longer the skills will be remembered.

PARE (Physical Abilities Requirement Evaluation)

The following chart shows the frequency of recertification for PARE, or its equivalent, among other jurisdictions. Please note that these practices may not be evidence-based. The RCMP requires members to be reassessed every two years.

Table 2 PARE

Jurisdiction	Issuing Organization	Test	Test Interval
Canada	RCMP	PARE -Foot Chase -Push/Pull Station -Torso Bag Carry	2 years (under periodic health assessment)
Canada	RCMP and Police	POPAT -Agility Run -Push/Pull Station -Vault Station -Weight Carry	Varies
Hollywood, FL, USA	Law Enforcement	Wellness Profile -1 RM strength -Sit & Reach -1 RM leg press -Push-ups -Sit-ups -1.5 mile run or 3 minutes step test -Broad Jump Blood Pressure	2 years
Hastings, NE, USA	Police Department	Physical Fitness Test -Push-ups -Sit-ups -Vertical Jump -Standing Broad Jump -Burpees -Hanging Test -Flexibility Test	Annual
London, England	Metropolitan Police	Fitness Test -Multi-stage Shuttle Run -Push/Pull Test	Upon Recruitment

Much of the work of a police officer is sedentary; however, when physical exertion is required, it is often in emergency situations (Bonneau & Brown, 1995). Due to the lack of activity during long periods of work, physical fitness is not maintained simply by working in the occupation. However, the nature of police work requires officers to maintain a level of physical fitness. Members of the RCMP must undergo a periodic health assessment (PHA) every two years. As part of the PHA, the PARE is retaken. This is beneficial to the police force as a whole because it ensures that officers maintain a level of physical fitness and that they maintain the physical skills necessary for police work.

The Physical Abilities Requirement Evaluation (PARE) "is designed to simulate critical incidents where a police officer chases, controls and apprehends a suspect" (RCMP, 2009b). The PARE was designed to meet the changing requirements of occupational fitness tests that were described in changes to The Canadian Human Rights Act (Kuruganti & Rickards, 2004). The changes in the document included a clarification of bone fide justification (BFJ) and bona fide occupational requirement (BFOR) (Kuruganti & Rickards, 2004; Wisotzki, 2008).

Traditionally, policing was a male dominated field, and there was no attempt to make a fitness test which a woman was capable of passing (Kuruganti & Rickards, 2004). The occupational tests used in the past were found to be discriminatory and required updating (Anderson, Plecas & Segger, 2001).

An occupational fitness test is designed to determine whether or not recruits are suited for the physical qualifications required in the occupation (Anderson et al., 2001). This is a different from physiological fitness testing. In physiological fitness testing, a recruit is tested on their overall fitness (Bonneau & Brown, 1995). Using these tests as a way to determine employment has been found to be unjust because the tasks are often irrelevant to the occupation (Bonneau & Brown, 1995).

The PARE has been designed to fall into the category of an occupational fitness test. This means that it tests physical abilities and skills that would be required of the average police officer as part of their work (Anderson et al., 2001; Bonneau & Brown, 1995). The test meets the requirements that have been placed by The Canadian Human Rights Act and is easily administered (Bonneau & Brown, 1995).

Occupational fitness testing is seen as favourable over past forms of testing because it gives a greater representation of whether an individual will be successful in an occupation. Occupational testing can determine whether or not someone is capable of performing the job at hand, and in so doing can help minimize injuries, long-term disabilities, and employee turnover rates (Anderson et al., 2001). The literature on PARE, and its equivalent, has focussed to date on what tasks to include in the occupation fitness test. No literature could be found that considered how how frequently the PARE should be reassessed.

PC4 Gas Mask

The following chart represents the standards and fit test frequency pertaining to respirator fit testing in general, and not the PC4 gas mask in particular. Please note that these practices may not be evidence-

based. The RCMP requires that users of the PC4 gas mask complete an initial one-time gas mask course followed by hands-on training, and then an annual recertification course/re-fit.

Table 3 PC4 Gas Mask

Jurisdiction	Organization	Standard/Regulation	Fit Test Frequency
Canada	RCMP	CSA Z94.4-02 Selection, Use, and Care of Respirators	Annual
Canada	Canadian Standards Association	CSA Z94.4-02 Selection, Use, and Care of Respirators	2 years
USA	Occupational Safety and Health Administration (OSHA)	OSHA 29CFR1910.134 Respiratory Protection Standard	Annual
USA	American National Standards Institute	ANSI Z88.2-1992 Respiratory Protection with ANSI Z88.10-2001 Respirator Fit Test Methods	Annual
USA	National Fire Protection Association	NFPA 1500-2007 Fire Department Occupational Safety and Health Program	Annual
United Kingdom	Health and Safety Executive	HSE 282/28 Fit Testing of Respiratory Protective Equipment Used for Controlling Exposure to Asbestos Fibres	Annual
Australia	Standards Australia	AS/NZS 1715:1994 Selection, use and maintenance of respiratory protective devices	Annual
Europe	European Committee For Standardization	EN529:2005 Respiratory protective devices - Recommendations for selection, use, care and maintenance - Guidance document	Annual (TSI website, 2008)

Respirators such as the PC4 gas mask will not provide adequate protection if they leak due to poor fit, poor maintenance or improper operation. Occupational health and safety professionals recommend a fit assessment during the initial training for respirator users, as well as at regular intervals after initial

training. Fit testing is used to determine if the respirator fits properly and is donned correctly. In Canada, fit tests must be performed according to procedures in the *CSA Standard CAN/CSA-Z94.4-02, Selection, Use and Care of Respirators*, which states that "under no circumstances shall a person use a tight-fitting respirator until a satisfactory qualitative or quantitative fit test has been achieved." CSA Z94.4-02 Clause 7.13(b) states that "a fit test shall be carried out at least every 2 years; however, it is recommended that a fit test be conducted annually" (Danyluk, 2009). In the United States, the Occupational Safety and Health Administration (OSHA) 29 CFR 1910.134 (k) "requires the employer to provide effective training to employees who are required to use respirators. The training must be comprehensive, understandable, and recur annually and more often if necessary" (OHSA 1910.134 (k)).

As an industry standard, annual fit testing is the norm.

Fit testing can be accomplished by using either quantitative (QNFT) or qualitative (QLFT) fit test methods.

- A QNFT is "an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator" (OSHA, 29 CFR 1910.134 (b)), in which a challenge agent (such as corn oil, saccharin and ambient room dust) is administered outside the respirator and the presence of the agent is detected by analytical instrumentation. QNFT has been conducted in the US for more than 30 years.
- QLFT is "a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent" (OSHA, 29 CFR 1910.134 (b)). It is considered to be a more subjective test because it relies on the subject's ability to taste or smell the challenge agent.

There is a body of peer-reviewed evidence to support the value of respirator fit testing. Studies have had different foci. Some focus on the importance of assessing mask donning efficiency (Crutchfield, 1995a; Crutchfield 1995b; Crutchfield, Kautz, & Peate, 1999). Others focus on training effectiveness (Bryant, Cole, Umberger, Kwak, Ruch, & Colligan, 1992). Still others focus on the importance of the initial and subsequent fit of the respirator (Burges & Mashingaidz, 1999). A 2008 Canadian article stated that "to our knowledge, there are no studies demonstrating that initial fit testing predicts an adequate fit during future use of the respirator" (Lee, Takaya, Long, & Joffe, 2008) In 1998, researchers found that when fit testing was not conducted, considerable face seal leakage would occur; average exposure was measured at 33% of ambient level. With fit testing, the average exposure reduced to 3% of ambient level (Centers for Disease Control and Prevention, 1996). In a 2004 study, researchers compared QNFT results from 5 different respirators. They concluded that without fit testing, five out of 100 respirator users would not experience acceptable protection (Lee et al., 2008).

There is evidence to support the necessity of annual respirator fit testing. According to the American National Institute for Occupational Safety and Health (NIOSH) documentation, when OSHA proposed their Respiratory Protection Standard, they solicited comments on fit testing. Although comments on the frequency of fit testing ranged from 6 months to 3 years, "a large number of rulemaking participants

supported OSHA's proposal to require the testing of respirator fit on an annual basis...The comments of these participants and other evidence in the rulemaking record convince OSHA that the annual testing requirement is appropriate to protect employee health" (OSHA, 1998). In 1999, the United States Court of Appeals for the 11th Circuit upheld the annual respirator fit testing requirement of 29 Code of Federal Regulations 1910.134, stating that "the annual fit-testing requirement is supported by substantial evidence in the record considered as a whole" (American Iron and Steel Institute v. OSHA, 182 F.3d 1261,1273 (11th Cir. 1999)). Although NIOSH continues to examine the issue, "it is currently unaware of any evidence conclusively demonstrating that the optimal periodicity for follow-up respirator fit testing should be different from the OSHA annual requirement" (Howard, 2007).

Carotid Hold

The following chart demonstrates the frequency of training for the carotid hold among several jurisdictions. Please note that these practices may not be evidence-based. The carotid hold is usually part of the 'arrest and control' training that officers receive. It was difficult to find carotid hold recertification timelines because they are usually included within this training package. In Canada, the carotid hold is only used by RCMP members who have been trained in its use, and only under threat of death or grievous bodily harm. All trained members must take a recertification course in the carotid hold every three years.

Table 4 Carotid Hold

Jurisdiction	Hours required	Frequency of Recertification
RCMP		Every 3 years
California Peace Officers	4 hours	Every 2 years
Las Vegas Police	4 hours	Annual
New Zealand	4 hours	Annual
Australia		Do not allow staff to use it
Vancouver Police		Every 3 years

The use of the carotid hold in law enforcement is controversial due to a number of well publicized deaths that have occurred after its use. In fact, one of the documented shortcomings of the research is that "almost all medical opinions on the subject of neck holds are based on case reviews of fatalities associated with police restraint" (Barros, 2007). Even supporters of the properly applied hold in Judo indicate that "while the carotid hold may be safe in the Judo context, it is subject to improper use in the law enforcement context" (Barros, 2007). In a New Zealand report, it was noted that "while there are risks in the use of the carotid hold, there are risks in any exercise of force. Prior to using the hold, officers must undertake a risk assessment to determine whether it is actually needed. *It should only be used as a last resort*" (Marshall & Shuey, 2001). Despite the abundance of medical research on the carotid hold, it does not provide a definitive answer as to whether the hold is safe. And from a legal

standpoint, the hold is neither firmly endorsed nor condemned (Barros, 2007). However, most experts agree on the need for proper training on the use of the technique.

Reay and Eisele (1982) indicate that "it is imperative that the officer who would use a neck hold have proper training in its use" and that "any law enforcement agency who prescribes to the policy of using the carotid sleeper should have frequent reinstruction in its use and continued reinforcement of the potential fatal results" (Reay & Eisele, 1982). One of the most comprehensive studies on neck restraints was done by the Canadian Police Research Centre (2008). The researchers reviewed litigation cases involving the carotid hold and reported that, where recommendations are made to law enforcement, most focus on training and policy, including such recommendations as:

- "Training on the carotid hold should be provided on a continuous basis and
- In training, officers should be informed of the hold's potential for lethality/serious bodily harm...
- Ongoing research should be conducted on the use of neck restraints and changes implemented where appropriate. (Although this recommendation was gleaned from the legal review, the medical experts tasked with reviewing the existing scientific research for this project unanimously indicated that no further medical research is required for making best-practices training standards and policy)" (Hall & Butler, 2007).

The report indicates that

> "The legal review revealed several cases where the officers were not retrained in the VNR [Vascular Neck Restraint] technique on a regular basis (typically since the initial academy training) and this was associated with a deterioration of the officer's skill in applying the technique. Agencies incorporating the VNR are advised to consider the importance of frequent and mandated recertification training to maintain officer competency" (Hall & Butler, 2007).

The Calgary Police Service Neck Restraint Literature Review (Barros, 2007) recommends that "there should be frequent reinstruction in the use of LVNR [Lateral Vascular Neck Restraint]. Members should be retrained at regular intervals". None of the reports indicate how frequently this training should occur and do not refer to research that supports such a recommendation. The report does recommend the type of training to utilize. It states that

> "In order to become competent in the use of this type of psychomotor skill, officers require initial training that as closely as possible reflects the conditions on which the technique will be applied in the operational environment. In this respect, training should begin with static, closed-motor instruction to master the proper application of the VNR, graduate through open-motor training and ultimately provide the opportunity for dynamic motor (stimulus response) or scenario-based training" (Hall & Butler, 2007).

Oleoresin Capsicum (OC) Spray

Oleoresin capsicum (OC), also known as pepper spray, is a naturally occurring substance derived from the cayenne pepper plant. It is an inflammatory agent that causes the mucous membranes of the eyes,

nose and throat to immediately become inflamed and swollen. OC sprays were introduced to supply laws enforcement officers with tools to control non-compliant subjects, while posing the least amount of risk to the officer, the subject and other citizens.

The following chart provides information on various police departments/associations and their OC spray training recertification requirements. Please note that these practices may not be evidence-based. The RCMP requires trained members to take a recertification course every three years.

Table 5 OC Spray

Jurisdiction	Date	Frequency of Recertification
RCMP	2010	Every 3 years
Deering, New Hampshire US	2006	Annual
Mansfield, Pennsylvania US (University police)	2005	Only necessary if stipulated by Director of Police
Canada Border Services Agency (custom officers)	2005	Periodic recertification
Camp Shelby, Miss, US (police academy training)	2009	Every 3 years
New Jersey Judiciary, probation officers	2005	Every 3 years
Norfolk, Virginia, police department	2010	Annual
Peoria, AZ, US	2009	Every 2 years
Cayman Islands, UK	2004	Annual
New Zealand Police Association	2009	Annual
Canadian Police Research Centre	2007	Annual
NS Department of Justice	2008	Every 3 years
Columbia, South Caroline, US	2010	Annual
Washington State Criminal Justice Training Commission	2010	Every 3 years
Vancouver Police	2007	Every 3 years

Most of the literature on OC spray usage by law enforcement agencies focuses on research on its effectiveness within law enforcement and not on certification or recertification requirements. Policy documents have been developed regarding the use of OC spray but few offer documentation or research on recertification or skill decay. Most indicate that

> "Policy guidelines regarding OC use must be developed and clearly defined. At a minimum, guidelines should consider issues related to the following appropriateness of agent use,

> necessity of warnings prior to application, decontamination procedures, incident documentation, and possible sanctions for indiscriminate use." (Onnen, 1993)

There is some literature on the need for training that is "comprehensive, going beyond the technical application to cover product derivation, the processes that cause physiological reactions and decontamination protocols" (National Institute of Justice, 1994). However there is no material outlining specific training programs for most provinces or states. In the Canadian Police Research Centre (2004) report on "Canadian Police Services on OC Spray Experience", 21 agencies answered yes to the question 'Does your service have training standards specific to OC spray?', but gave no further details.

Lumb and Friday (1997) advocate adequate officer training, stating that "one-time training is not sufficient...Adequate training should be ongoing, not only in the proper use of the chemical, but also in how threatening situations become defined by both the officer and the suspect" (Lumb & Friday, 1997).

Dutch researchers found that officers with more job experience reported OC as being more effective than less experienced officers (Adang, Kaminski, Howell, & Mensink, 2006). Adang and Mensink's (2004) paper on the safety of pepper spray in the Netherlands concludes that

> "These findings have led us to make recommendations to improve the training given to the officers to be equipped with pepper spray. At the same time, we do not feel that the training given to Dutch officers was less adequate that that used in other countries. In fact, the 6-8 h training was more extensive than the ones used in other countries" (Adang & Mensink, 2004).

The Texas Youth Commission Office of the Independent Ombudsman commissioned a study called "OC Pepper Spray: Research Overview and Policy Recommendations" (Espinosa & Belshaw, 2008). They concluded that agency policy and procedures for the use of OC spray should not only be strictly adhered to but also closely and regularly monitored. They recommended thorough and ongoing training.

In 2004, Orrick strongly advocated for up-to-date policies and routine training in order to ensure that OC is properly used. "For an officer to have a conditioned response, he must have repeated the action many times. In order to develop this response when deploying OC it is important for agencies to incorporate pepper spray classes in their "refresher training" program and allow officers to practice with aerosol canisters" (Orrick, 2004). He advocates for refresher training that is divided into two segments: classroom and practical exercises.

Finally, Orrick supports training that is "behaviourally anchored. The more senses involved in the training, the more likely the student will retain the information from the class... Officers should be encouraged to spend time experimenting with different techniques of carrying, triggering and application until they become comfortable" (Orrick, 2004).

There is no current research that recommends how quickly these skills diminish or how often refresher training should occur.

Baton

The baton has been used in law enforcement since the early 1800's. Beginning in the UK as a 'truncheon', the baton has developed over time to the side-handled baton, the metal collapsible baton and the 'hybrid baton' by RRB Systems. The straight baton, side-handled baton, and expandable baton are the most common types of batons used by police today (Toronto Police Department Use of Force Committee, 1998). "Over the last 15 years most law enforcement agencies, particularly in the United States and Canada (but also worldwide) have switched to issuing officers an expandable/collapsible metal baton for street use" (Blue Baton website). Training in the use of the baton for law enforcement is initially included in basic training for police officers. It is also included in refresher training that officers complete on a regular basis. The RCMP requires members to recertify in the use of the baton every 3 years. The following chart identifies the frequency other jurisdictions require for baton recertification. Please note that these practices may not be evidence-based.

Table 6 Baton

Jurisdiction	Date	Frequency of Recertification
RCMP	2010	Every 3 years
Monadnock Police Training Council	2009	Every 3 years
Peoria Police Department	2005	Every 2 years
Instructional Shooting Inc	2010	Annual
Thin Blue Line Supplies (Training), Texas	2010	Every 2 years
PSTA Security Expandable Baton Training Certification (US training agency)	2010	Every 2 years
TJA Use of Force Training, Inc	2009	Every 5 years
Nova Scotia Department of Justice	2006	Not to exceed 36 months
York Police, ON	2010	Annual
Vancouver Police	2007	Every 3 years

Although there is research on the use of the baton within law enforcement and the need for officer training, there is no research on the frequency of recertification requirements. The research reported here points to a need for thorough and ongoing training in the use of the baton but does not indicate how frequently this training should occur.

In a 1991 Canadian Police Research Centre report evaluating the telescopic baton, the researcher indicated that "most members, if given an opportunity would be carrying any number of different types of batons, all based on personal taste, some requiring very little training to those requiring extensive training" (Kelly, 1991). The officers the researcher surveyed indicated that "there was a general concern about training in the use of the batons presently being carried" (Kelly, 1991) but no further details were included.

In a 1998 report by the Toronto Police, researchers recommended

- "the Chief of Police require that all front line police officers, whether in uniform or plainclothes, receive training on the use of both the Casco Straight Baton and the ASP Expandable Baton
- "Training and Education provide mandatory training for all front line police officers, whether in uniform or plainclothes, on the use of both the Casco Straight Baton and the ASP Expandable Baton" (Toronto Police Department Use of Force Committee, 1998).

According to the report, "the most effective baton for uniform is the Casco Straight Baton. The ASP Expandable Baton, however, is the only practical choice for plainclothes duty when the baton must be carried in a concealed manner" (Toronto Police Department Use of Force Committee, 1998). Because officers move between uniform and plainclothes positions throughout their career, the report recommends training all officers in both batons.

In a UK report assessing the expandable side-handled baton, researchers found that "both trainers and trainees felt that it was vital to provide regular 'refresher' training in baton use" and that "many officers felt that there should anyway be refresher training, as well as a retest of all officers every twelve months" (Kock, Kemp, & Rix, 1993). Officers trained in several different batons felt that each baton had different training requirements, depending on the range of techniques possible with each baton. Officers felt that some batons were easy to master and thus required less refresher training than others. They also quoted a London Metropolitan Police Study which recommended "where possible, refresher training be given to officers at 6 month intervals" (Kock et al., 1993).

In another UK report on Police Training and Recruitment, the report indicates that "in both 1996-97 and in the following year, the [Police Complaints] Authority.... analysed baton related complaints against this training background. In both years this exercise suggested that those forces providing the most frequent refresher training experienced the lowest level of complaints" (Select Committee on Home Affairs, 1999). The report noted that "The PCA's [Police Complaints Authority] evidence on baton training seems to demonstrate clearly that increasing training—particularly refresher training—reduces the level of complaints from the public" (Select Committee on Home Affairs, 1999). It also noted that there should be minimum standards in baton training, which vary from force to force. This is important when one considers that a Canadian study found that the baton was the most injurious force intervention technique used in their Calgary study. They found that "16.1% more subjects who were controlled with a baton sustained injuries requiring medical treatment than with a CEW" (Butler & Hall, 2008).

Conducted Energy Weapon

The Conducted Energy Weapon (CEW) is also known by its trade name, Taser. The RCMP requires members to recertify in the use of CEWs annually, although the 2008 Study of the Conductive Energy Weapon – Taser report of the Standing Committee on Public Safety and National Security recommended that "the RCMP amend its policy by introducing the requirement that Taser gun use certification be renewed at least every two years" (from the 3 years that it was initially) (Standing Committee on Public

Safety and National Security, 2008). The following chart indicates how often other jurisdictions require Taser recertification. Most of the policing agencies require annual recertification in the CEW. Please note that these practices may not be evidence-based.

Table 7 CEW

Jurisdiction	Frequency of Recertification
RCMP	Annual
Nova Scotia Department of Justice	Not to exceed every 36 months
Edmonton Police Officers	Every 2 years
Quebec	Annual
US Air Force	Annual
Austin Police, USA	Annual
Ohio Highway Patrol, USA	Annual
Orange County Sheriff, USA	Annual
Minneapolis Police, USA	Annual
Phoenix Police, USA	Annual
Sacramento Police, USA	Annual
Sacramento Sheriff, USA	Annual
San Jose Police, USA	No recertification required, although Taser training is included in annual use-of-force simulations training
Taser International User Training	Annual
Bloomfield, Connecticut, USA	Every 2 years
Cromwell, Connecticut, USA	Annual
Danbury, Connecticut, USA	Annual
East Hartford, Connecticut, USA	Annual
Seymour, Connecticut, USA	No policy
West Hartford, Connecticut, USA	Annual
Connecticut State Police, USA	Annual
Oxford Police, Florida, USA	Annual
Sun Lakes Sheriff's Posse, Arizona, USA	Annual
Michigan Police, USA	Annual
Northern Ireland	Annual
New South Wales, Australia	Annual
Queensland, Australia	Annual
New Zealand	Annual

There has been significant research into the effects of the Taser and its connection to several much publicized deaths. In addition, there have been ongoing attempts to synthesize this medical research in order to draw out an informed direction for policy makers. Attention initially focused on usage creep but has "shifted towards a focus on how these concerns are being dealt with in terms of training and accountability policies and measures" (Synyshyn, 2008). However, although most of the policy papers stress the need for adequate and recurring training, they do not refer to any research on how quickly CEW skills decay or what training approach is most effective.

The American Police Executive Research Forum (2005) recommended that "CED [Conducted Energy Devices] recertification should occur at least annually and consist of physical competency and device retention, changes in agency policy, technology changes, and reviews of local and national trends in CED use" (Police Executive Research Forum, 2005). The Analysis and Recommendations for a Quebec Police Practice on the use of Conducted Energy Devices (Standing Advisory Subcommittee on the Use of Force, 2007) recommended annual recertification for officers carrying Tasers. The BC Office of the Police Complaint Commissioner's report on Taser technology indicated that "there appears to be significant inconsistencies throughout the province in the training of police officers in the use of the TASER" (Butt, & Hall, 2005). They recommended standardized training. In 2008, the RCMP Use of the Conducted Energy Weapon (CEW) report mentioned the importance of adequate training (Stuart & Lawrence, 2008).

The US Government Accountability Office (GAO, 2005) studied 7 agencies across the US regarding their Taser use and found that

> "Six of the seven agencies required yearly recertification in the use of Tasers. One agency—the San Jose Police Department—does not require yearly recertification for Tasers and is not currently considering the establishment of such recertification. However, an official from the San Jose Police Department told us that the department includes Tasers in its annual use-of-force simulations training in which officers are trained in the use of Tasers that would be considered appropriate in various law enforcement scenarios" (US Government Accountability Office, 2005).

All of the reports, including the US Department of Justice's Conducted Energy Devices: Development of Standards for Consistency and Guidance, highlight the importance of training. The US Department of Justice's report does support the Police Executive Research Forum's recommendation of annual recertification.

A September, 2009, report submitted to the American National Institute of Justice indicated that "more work is needed in the area of officer training in the use of CEDs. There is little attention in the CED literature to training of officers and sheriffs' deputies in the proper use of CEDS" (Police Executive Research Forum, 2009). The report indicates that there are few independent sources (beyond the manufacturers of the device) to consult when developing CED training and that as a result, "there is little consensus on what training should be required, what it should encompass, or what its purpose should

be beyond familiarization with the device" (Police Executive Research Forum, 2009). According to Smith et al. (2009), there is no research to identify which training approach is more effective.

Also noted in a UK evaluation of Taser devices, the researchers interviewed officers who confirmed the need for adequate training and indicated that "Taser should only ever be used by specially trained firearms officers who are highly skilled at making judgements under stress" (Police Scientific Developmental Branch, 2006).

Most policy papers indicate that "training will continue to evolve as research and experience continue to provide new information" (Butt & Hall, 2005). However, there is yet to be any research on how quickly CEW skills perish or what training approach is more effective. As an industry standard, annual recertification is the norm.

IARD (Immediate Action – Rapid Deployment)

RCMP officers trained in Immediate Action Rapid Deployment (IARD) must recertify every year. IARD is also known as active aggressor training, Active Shooter Response, Violent Intruder – Police and Educators Response (VIPER), Hall Boss training and Quick Action Deployment (QUAD). IARD is the "swift and immediate deployment of law enforcement resources to an on-going, life threatening situation where delayed deployment could result in death or grievous bodily harm to innocent persons" (RCMP, 2007). It became part of police training primarily as a response to the shootings at Columbine in 1999. Prior to Columbine, most police agencies used Special Weapons and Tactics (SWAT) teams to respond to an active shooter. Patrol officers were expected to 'contain, isolate and negotiate' until SWAT arrived. The theory behind training patrol officers in IARD is that "we can't wait for the arrival of a SWAT unit when a killer is actively shooting victims" (Illinois State Police Academy, 2003). The ultimate goal of IARD is public safety. In Canada, the RCMP, as well as some provincial police agencies and municipal police, train in IARD. Not every police department trains in IARD due to financial, personnel or time constraints (Trip, 2009).The following chart indicates how often other jurisdictions require IARD recertification. Please note that these practices may not be evidence-based.

Table 8 IARD

Jurisdiction	Frequency of recertification
RCMP	Annual
West Virginia University Department of Public Safety	Annual
University of South Caroline, Division of Law Enforcement and Safety	Annual
University of Pennsylvania, Division of Public Safety	Annual
Jonesboro Police, Arkansas, US	Annual
Greenfield Police, US	Annual

Training in IARD varies widely. Many agencies use live role-players to create a stressful situation for learning these high risk skills. Some trainers believe it is important to "develop and implement a realistic active shooter package that addresses the worst-case scenario" (Howe, 2007). The training has "prompted many of the nation's police agencies to engage officers in ultra-realistic training regimes aimed at eliminating and minimizing casualties by preparing patrol officers to go in where they typically haven't gone before" (Garrett, 2007). Others use a short classroom-only format. What does not seem to be debated in the literature is the need for recurrent training in this perishable skill (Wikipedia; Illinois State Police Academy, 2003; Howe, 2007) and that "IARD procedures need to become a common and well practiced function of patrol" (Armellino, 2007).

Although many articles indicate the need to "train for the worst and hope for the best", few indicate what that training should entail and how often it should occur.

"IARD training is designed to put officers under as much stress as possible through noise, visual effects and simulation rounds to give them a sense of how they might react when their senses are overloaded" (Garrett, 2007). Much of the American training is done as a 'train-the-trainer' course offered by the National Tactical Officers Association (NTOA). Although it was difficult to find documentation on IARD training, one article did indicate that "most police agencies conduct in-service active shooter response tactics and techniques once a year" (Sanow, 2007).

Firearms (Pistol, Shotgun, Rifle)

The following chart indicates how often several jurisdictions require firearms (including the pistol, shotgun and rifle) recertification. Please note that these practices may not be evidence-based. The RCMP requires members to recertify annually.

Table 9 Firearms

Jurisdiction	Frequency of Recertification
RCMP	Annual
New York State Police	Semi-annual, in-service training in the field
Louisiana Peace Officer Standards and Training	Annual
South Australia	Annual with the issue firearm
Federal Way (Washington) Police	Annual
New York Police Department	Annual
California Commission on Peace Officer Standards and Training	Minimum of four hours every 2 years

Jurisdiction	Frequency of Recertification
New Zealand Police	Requalification every 18 months
India Bureau of Police	None
Norwegian Police	Not regularly armed

It has been estimated that the time scale involved in assessing a situation, evaluating the threat, and reacting in an appropriate manner involving firing aimed shots is approximately 1.25 seconds (Burrows, 2007). The proper control and usage of firearms is considered a motor skill in that some form of repetition and/or practice is necessary in order to maintain or improve performance levels. A skill such as firearms, which will be performed under intense levels of stress, requires greater repetition and/or intensity during development (Smith et al., 2009). However, this initial period of firearm skill also necessitates constant maintenance, ideally through both physical and mental practice.

As evidenced by the chart above, the frequency of this maintenance scheduling varies greatly across police jurisdictions. The average time range between required requalification, for countries with regularly armed police, tends to average between six months and two years. No strict standard has been enforced suggesting a more concrete time period to be enforced across all jurisdictions, although in their review of the New Zealand Police, Marshall and Shuey (2001) state that the "[b]est advice in the international environment is that 'hard skills' such as firearms training... need to be delivered every four to six months." Marshall and Shuey (2001) go on to suggest the following as one of the prevailing reasons for the vast discrepancy that exists when examining the regulations put forward by various policing agencies worldwide:

> "Training frequency invariably creates an organisational dilemma in balancing the time commitments in the delivery and retention of perishable skills and the operational needs for front line law enforcement and community services."

In addition to the frequency of requalification training, the sessions also vary dramatically in the total number of hours involved, the distribution of these hours across the time period, cartridge allotments, and styles (Morrison, 2003).

The most prevailing concern within firearms training is that it has focused largely on the use of firearms in static, stereotypical situations (Wuyts & de Maerschalck, 1993). This differs from the complex situations and decision making required by real-life scenarios occurring in the field. As far back as the 1960s, this discrepancy has been noted in policing research (McNamara, 1967). The effect of this inconsistency between training and the requirements of the field can be seen in the low shooting efficiency evidenced in officer testing of new training approaches (Helsen & Starkes, 1999). This training method showed that, even with simulations aimed at improving the complex decision-making skills of officers in potentially dangerous situations, shooting accuracy was low due to the use of stationary

shooting during training. The retention of shooting skills has been directly linked to the similarity of the training to the actual event (Arthur et al., 1998). In other words, the more training replicates field work, the more accurate the shooting is likely to be. This finding is not limited to the type of scenario practiced, as even increasing the levels of stress applied to police officers in their training can help acclimatize them to real-world circumstances resulting in more accurate shooting (Oudejans, 2008).

Apart from training aimed at accurately portraying scenarios from the field, varying recommendations have been made with the goal of improving or adding to current firearm training. For instance, Le Scanff and Taugis (2002) used background derived from sports psychology in an experiment that showed an increased center of control, created using progressive muscle relaxation, and improved breathing techniques were able to enhance shooting accuracy. Overlearning, or over-practicing, is training above and beyond the level required to use the weapon competently. It is another often suggested tactic of increasing proficiency over periods of non-use (Arthur et al., 1998). This overlearning is thought to strengthen the bond between stimulus and response, thereby decreasing the chances that the response of shooting will decay (Schendel & Hagman, 1982). The increased repetitions and practice that truly define overlearning may also provide the officer with further feedback, enhancing the automaticity of the firing response and reducing the amount of concentrated effort needed (Arthur et al., 1998), which may possibly allow for improved vigilance and decreased attentional narrowing (Le Scanff & Taugis, 2002).

Bank Miller (2009), the Director of Law Enforcement and Civilian Training at International Training, Inc. and former Chief Firearms Instructor for DEA Firearms and Tactical Training at the FBI Academy, has suggested the following twelve elements as being critical for firearms training in terms of policing:

1. Prepare officers for immediate, spontaneous, lethal attacks
2. Prepare officers for assaults by multiple threats and uninvolved subjects
3. Integrate the sudden transition to firearms from arrest and control techniques, including searching and handcuffing
4. Base training on the fact that most officers are killed at short distances
5. Base training on the fact that officers will have limited fine and complex motor control
6. Integrate two-person contact and cover teams involved in realistic scenarios
7. Emphasize the survival mindset and the will to win in all skills training
8. Integrate one-handed firing of a handgun. Include dominant and support hand, plus drawing, reloading, and stoppage clearing
9. Integrate close-quarter structure searching and clearing plus indoor combat tactics
10. Emphasize dim or no light situations as much as daylight training
11. Integrate moving then shooting and moving while shooting techniques

12. Integrate engagement techniques for moving targets, both laterally and charging

In particular, guidelines six and eight through twelve place a firm emphasis on training under conditions likely to be experienced in the field, moving away from those typically seen at police shooting ranges, including lit areas and a lack of movement. These twelve elements further emphasize how differing the firearms training can aim to limit the level of skill decay.

Options for Consideration

1. Include psychological factors, such as pressure and increased stress, in training procedures.
2. Include soft skills, such as stress management, in training.
3. Consider using overlearning, conditions of retrieval, evaluation criteria and method of testing in training to reduce skill loss over time.
4. Recertify **first aid/CPR** skills a minimum of once every year, and acquire mannequin practice throughout the year if possible.
5. The literature on **PARE, the PC4 Gas Mask, CEWs** and **IARD** supports the RCMP's current practice for recertification/refresher training. Continue the current practice for recertification/refresher training for these skills.
6. Research on recertification requirements in the use of the **carotid hold**, **OC spray** and the **baton** is inconclusive except to state that it should be thorough and ongoing. Other jurisdictions recertification timelines vary from annually to every 3 years. Conduct further empirical research to determine adequate training requirements, frequency of training and best training practices.
7. Conduct **firearms** recertification every six months.
8. Conduct **firearms** training aimed at recreating realistic scenarios. Include increased movement while shooting and aspects designed to increase stress levels in the shooter.

Conclusion

The maintenance of perishable police skills has both organizational and financial implications. As stated by Marshall and Shuey (2001), "training frequency invariably creates an organisational dilemma in balancing the time commitments in the delivery and retention of perishable skills and the operational needs for front line law enforcement and community services." Agencies are forced to balance time and financial resources with the officers' need to maintain those police skills that may perish without thorough and ongoing refreshing.

The need for ongoing training and recertification is clear.

1. **First aid** and **CPR** certification is required for an individual to begin policing. These skills can begin to deteriorate quickly after training (Einspruch et al., 2007; Mahony et al., 2008; Wynne,

1986). It is recommended that these skills are recertified a minimum of once every year, and that mannequin practice is acquired throughout the year if possible.

2. The **PARE** has been identified as a strong example of a well functioning occupational fitness test (Bonneau & Brown, 1995). Encourage the maintenance of physical fitness to avoid injuries and ensure the officers are successful in their jobs. The research supported not only the use of the test for recruits, but also as a periodic assessment of health.
3. The literature on the **PC4 Gas Mask** supports the RCMP's current practice of an annual recertification course/re-fit.
4. Research on the need for recertification in the use of the **carotid hold** is inconclusive except to state that it should be thorough and ongoing. Other jurisdictions recertification timelines vary from annually to every 3 years.
5. Research on the need for recertification in the use of **OC Spray** is inconclusive except to state that it should be thorough and ongoing. Other jurisdictions recertification timelines vary from annually to every 3 years.
6. Research on the need for recertification in the use of the **baton** is inconclusive except to state that it should be thorough and ongoing. Other jurisdictions recertification timelines vary from annually to every 3 years.
7. Although there is little research on how quickly **CEW** skills decay, a review of the recertification requirements of other jurisdictions supports the RCMP's current practice of annual recertification.
8. The literature on **IARD** is scarce, but it does support the RCMP's current practice of annual recertification.
9. The literature on the need for recertification in the use of **firearms** (pistol, shotgun, and rifle) points to a 6 month recertification period. Firearms training should be aimed at recreating realistic scenarios and should include increased movement while shooting and aspects designed to increase stress levels in the shooter.
10. Although the training for several of the above skills occurs within situations of increased stress, all hard skill recertification should utilize training situations which increase participant stress levels.

How often these skills need to be refreshed can be a matter of preference and debate, but the necessity of recertification is well established. Research clearly indicates that police officer "training should be realistic, must be tailored to the experiences and needs of the officers, and must be delivered on a continuous, regular basis" (McEwen, 1997). Many of the RCMP's current practices are supported in the literature and are consistent with other jurisdictions. There are, however, jurisdictions that require more frequent recertification on certain skills. Further empirical research is warranted in these skills to determine the exact type of training and frequency required.

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