

Women in Ground Close Combat Roles: The Experiences of other Nations and a Review of the Academic Literature

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Executive summary

The exclusion of women from specific male roles in the military is covered under Section 85(4) of the Sex Discrimination Act 1975 (Application to Armed Forces etc.) Regulations 1994. A European Community Equal Treatment Directive stipulates that a review of the role of women in certain ground close combat environments should be undertaken every eight years, in order to determine if maintaining such derogation from the Act is still justifiable. The next review is due in 2010.

In order for the MoD to make an informed opinion based on the existing scientific data relating to this issue, the Dstl Human Systems Group was tasked by Deputy Chief of the Defence Staff (Personnel) to consider the experiences of other nations in employing women in ground close combat roles/environments, and to undertake a literature review of the recent research on the effectiveness of mixed gender teams (i.e. published from January 2002 onwards).

The 2002 Women in Armed Forces report stated there was no evidence that women would perform less well in combat roles compared to men, but that gender may influence team cohesion and consequently, affect operational effectiveness. Given the previous findings, this work places particular emphasis on the effects of cohesion on performance, particularly factors that promote or hinder the establishment and maintenance of cohesive groups, and potential consequences should team cohesion fail. This work is undertaken within the context of gender differences in ground close combat roles, i.e. roles that are primarily intended and designed with the purpose of requiring individuals on the ground to close and kill the enemy. Such primary roles are generally the preserve of the Royal Marines, Household Cavalry, Royal Armoured Corps, Infantry and RAF Regiment, none of which are currently open to women.

Military/defence representatives from 27 countries were contacted in order to obtain information relating to their policies, practice and experience of integrating women into combat roles. It was found that many countries now allow women to serve in combat arms units, with the Nordic countries being particularly progressive. However, the U.S. U.K. and Australia still maintain an exclusion policy on women in combat units. Gender integration appears to have often been imposed on the nation's military due to political and legal pressures. For those nations that do employ women in such units, there has been rather slow progress in terms of uptake, and constitute only a very small percentage of the total number of serving female personnel. Reasons given include the rigorous physical demands of the role, perceived lack of emotional resilience or aggressiveness. There was also evidence of enduring negative gender stereotyping from male colleagues, with perceived detrimental effects on team cohesion. It was also found that where combat roles are open to women many are just not attracted to the ground close combat elements of the job.

The literature review was based on searches of research databases housed within the Dstl Knowledge Portal (MoD's knowledge repository), the library of the Joint Services Command & Staff College, Shrivenham, and the University of Portsmouth main Frewen Library. No rigorous scientific research examining the effects of mixed gender teams on

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cohesion and performance in the combat environment was found. It was noted that multidimensional nature of cohesion makes it difficult to define and measure, particularly in terms of team effectiveness, and this was reflected in some of the literature.

A positive relationship between team cohesion in general and performance was found. Cohesion appears to increase solidarity, especially under battle conditions, and is partially determined by interpersonal emotional bonds among unit members, and commitment to the task, all of which leads to improved task performance. However, overly cohesive teams disrupted effectiveness, with the needs of the team superseding that of the larger unit to which they belong.

Cohesion was not adversely affected in mixed-gender groups within the non-combat military environment, having little impact on readiness and morale, especially when women were not a novelty in a unit. This was aided where there was a shared experience of a stressful exercise, and previous familiarity with other team members.

Summary

This review was unable to identify any empirical, scientific data examining the effects of women in close combat teams, especially within the UK Armed Forces, and it appears currently that no such information exists.

Many countries do employ women successfully in mixed gender combat teams, the numbers are very small, and therefore, where research is feasible the small sample sizes would call into question the viability of statistically significant measurements in relation to cohesion and the impact on operational effectiveness.

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1 Introduction

- 1.1 This work was conducted by the Human Systems Group, Dstl, on behalf of Deputy Chief of the Defence Staff (DCDS) (Personnel) Sec KM Manager, under Dstl contract number 702564. The task comprised of two work strands towards fulfilling a European Commission requirement to review existing policies on the exclusion of women from ground close combat roles.
- 1.2 The Ministry of Defence is obliged to assess whether the justification for excluding women from ground close-combat roles can be maintained and to notify the European Commission of the results of the assessment. The policy was last reviewed in 2002. On the advice of the Ministry of Defence's Legal Advisers, The Secretary of State has agreed that a review of this policy should be carried out in 2009-2010.
- 1.3 The focus of the review will be on the exclusion of women from ground close-combat roles. Other roles, such as the exclusion of women from service in submarines, will not be considered. It is not the intention to re-evaluate work carried out as part of the previous review in 2002 but to build upon it.
- 1.4 The review will comprise:
1. a review of recent research literature (ie. published since 2002) on the effectiveness of mixed-gender teams in a combat environment;
 2. an assessment of women's roles in recent operations;
 3. consideration of the experience of other nations in employing women in ground close-combat roles.
- 1.5 The review will also confirm that the conclusions reached on physiological issues in the Women in Combat Study 2002 remain unchanged. D DCDS(Pers) SC&W will be responsible for the overall direction of the review.
- 1.6 This report **addresses strands 1& 3 only** and took place between July–September 2009. Strand 2 has remained the remit of D DCDS(Pers).

1.7 Background

- 1.7.1 The role played by women in the UK Armed Forces was formally recognised after World War II with the permanent establishment of Women's Services. Further significant changes took place in the 1990s, and from 1998 onwards women were allowed to serve in the front line onboard ships, as pilots of combat aircraft, and in combat support roles in the Royal Artillery and Royal Engineers. However, women remain excluded from serving in ground close combat roles whose primary function is to close with and kill the enemy. Such roles are currently required of the Royal Marines General Service (RMGS), the Household Cavalry and Royal Armoured Corps (H Cav/RAC), the Infantry, and the Royal Air Force Regiment. (In addition, women do not serve on submarines or as mine clearance divers due to medical reasons.) (Women in Armed Forces, May 2002) [1].
- 1.7.2 The exclusion of women from specific male roles in the military is covered under Section 85(4) of the Sex Discrimination Act 1975 (Application to Armed Forces etc.) Regulations 1994, which states that "Nothing in this Act shall render unlawful an act done for the purpose of ensuring the combat effectiveness of the naval, military or air forces of the Crown". An unsuccessful challenge to this regulation was mounted in the European Court of Justice (ECJ) in 1999, whose ruling was that Member States can derogate from the principle of equal treatment in the interests of combat effectiveness but such derogation must be necessary and appropriate.
- 1.7.3 Under the European Community Equal Treatment Directive, a review of the role of women in such combat environments is required every eight years, in order to determine whether maintaining such derogation from the Act is still justifiable. The last review was carried out in 2002, and the decision was taken to retain the existing policy of employing only male personnel in certain combat roles [1].

1.8 Reasons for Decision taken in 2002

The Secretary of State is satisfied that as some women will certainly be able to meet the standard required of personnel performing in close combat roles, the evidence of women's lower physical capacity should not, in itself be a reason to maintain the restrictions. Nor are the identified psychological differences between men and women, or the gap in the capacity for aggression, compelling evidence that women would perform less well in close combat.

The key issue is the potential impact of gender mixing in the small teams essential to success in the close combat environment. The small size of the basic unit in ground combat, coupled with the unrelenting mental and physical pressure extending over days or weeks, sets them apart from other military roles. Even small failures in a high-intensity close combat environment can lead to loss of life or the failure of the team to meet its objectives. None of the work that either has been, or could be, done can illuminate the key question of the impact of gender mixing on the combat team in close combat conditions.

Given the lack of direct evidence, from either field exercises or from the experience of other countries, the Secretary of State concluded that military judgement must form the

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basis of any decision. The military viewpoint was that under the conditions of a high intensity close-quarter battle, group cohesion becomes of much greater significance to team performance and, in such an environment, the consequences of failure can have far-reaching and grave consequences. To admit women would, therefore, involve a risk with no gains in terms of combat effectiveness to offset it.

The above arguments have been considered in relation to each of the units and roles in question - the Royal Marines General Service, Household Cavalry and Royal Armoured Corps, Infantry and the RAF Regiment – to decide whether or not they apply equally to them all. As all the roles necessitate individuals working together in small teams which have to face and engage the enemy at close range, the Secretary of State for Defence concluded that the case for lifting the current restrictions on women serving in combat roles has not been made for any of the units in question. Taking the risk that the inclusion of women in close combat teams could adversely affect those units in the extraordinary circumstances of high intensity close combat cannot be justified.

1.8.1 The next review is due in 2010, and the findings of the present study will form part of the evidence base towards informing future policy decisions relating to this issue.

1.9 Objectives of the work

1.9.1 The objective of the work was to:

- Consider the experiences of other nations in employing women in ground close combat roles/environments.
- Conduct a literature review of military reports and academic literature (published between 2002-2009) pertaining to the effects of mixed gender teams on cohesion and performance in a combat environment

1.10 Limitations on Scope

1.10.1 At the request of DCDS(Pers) the literature review only considers psychological factors. Gender-related physiological differences and their potential effects on cohesion and performance have not been reviewed.

1.11 Definitions

1.11.1 In order to maintain consistency across the various work strands the military customer provided a set of definitions relating to key terms to be addressed in the review, which are as follows:

1.11.2 Cohesion JDP 0-01 defines moral cohesion as:

“A source of moral fortitude to fight and keep on fighting. Cohesion occurs when individuals want, or are encouraged, to work together, normally to share tasks, provide each other with support and achieve a common enterprise. Moral cohesion depends on

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cultural solidarity, shared experiences, a common sense of worth, appropriate discipline and an expressed collective identity, which is sustained by shared common values and standards. It endures genuine and deep comradeship that endures, notwithstanding violence and fear of death and injury.”

1.11.3 Combat Effectiveness JDP 0-01 Edn 7, Jun 06 definition is:

“The ability of a unit/formation/ship, weapon system or equipment to carry out its assigned mission, role or function. The cohesion of a unit is a vital factor in its combat effectiveness.”

1.11.4 Ground Close Combat Roles are defined as:

“Roles that are primarily intended and designed with the purpose of requiring individuals on the ground to close and kill the enemy.”

1.11.5 Ground Close Combat is defined as:

“Combat with the enemy over short range on the ground.”

1.11.6 For the purpose of this review, the key distinction is the primary function or purpose of a unit. Units with ground close combat roles have ground close combat as the defining element of their function and ethos. Members of the unit may be required to use weapons such as assault rifles and machine guns, grenades and bayonets, and be prepared to take part in hand-to-hand fighting. By contrast, in units with other roles (many of which are warlike and operationally vital), an individual could be ‘involved in’ an incident of ground close combat as a consequence of delivering their outputs, despite their role not being defined as a ‘ground close combat role’.

2 Team cohesion and team effectiveness

2.1 Introduction

2.1.1 Central to this review is the concept of the team, and how well the team fits and works together (i.e. team cohesion) and, ultimately, how such cohesion relates to team effectiveness. In the review of 2002 it was noted that the inclusion of women in ground close combat roles could adversely affect unit cohesion, which could have potentially adverse effects on unit effectiveness during high intensity combat [1]. As cohesion is fundamental to this literature review there is some merit in providing the reader with a rudimentary outline of some of the underlying elements relating to this rather nebulous concept (Mudrack, 1989) [2], in order to put the review into context. The following is therefore a very brief, non-technical overview of cohesion and how it relates to effectiveness.

2.2 Team cohesion

2.2.1 The military definition of cohesion as described in paragraph 1.4 emphasizes a specifically moral interpretation in that it is seen as "...a source of moral fortitude to fight and keep on fighting". The underlying implication being that there is an element of right or wrong in the behaviour, which is being applied mainly to the combat extreme. The definition also goes on to describe how cohesion is brought about, what the dependent conditions are, and how it is maintained. Although being fairly comprehensive, for the purposes of this study, the authors address a wider perspective of cohesion as agreed with the customer for this work. Several measures of team cohesion used in the military domain are described and reviewed at Annex A. However, it is noted that to date, there have been no robust reliability or validated studies carried out on these measures relating to women in combat roles as the population samples have been too small to undertake meaningful statistical analysis.

2.2.2 Cohesion relates to teams not individuals (Beal, Cohen, Burke, & McLendon 2003) [3], which at a basic level is about the capacity of a team to get on well together or to 'stick together' (Collins, Madigan, & Wiedemann, 2007) [4]. A simplified definition of military unit cohesion is that offered by McBreen (2002) [5], in which he states that for ground close combat a small cohesive unit:

".....has trained together to develop the collective will and bonding, the mutual trust and interdependency, and the collective skills needed to fight successfully on the battlefield" (p.5).

2.2.3 The above definitions show that cohesion is not a unitary concept, which is further reflected in two of the more recent prevailing models. For instance, Beal *et al.* (2003) [3] distinguished between the following dimensions of cohesion:

- Social cohesion refers to the nature and quality of the bonds of friendship, liking, caring, and closeness among team members;

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- Task cohesion refers to the shared commitment among members to achieving a common goal that requires the collective, motivated efforts of the team;

2.2.4 And a third dimension that relates to:

- Team pride, referring to valuing the team identity, of belonging to the team as a whole, and perceived attractiveness of being a team member.

2.2.5 It is the first two dimensions that are most prominent in recent research in this area.

2.2.6 Additional work carried out by the U.S. Army Research Institute (ARI) [6] offers a further three dimensions to the overall cohesion equation:

- Horizontal cohesion that refers to the bonds between team members;
- Vertical cohesion that refers to the bonds between team members and their leaders;
- Organisational cohesion that refers to the bonds between team members and the organisation as a whole.

2.2.7 Brown *et al.* (2006) [7] usefully combined the above theoretical dimensions and encompassed a number of sub-components within the overall framework, which are reproduced in Annex B, Table 1.1. They also provided a concise and comprehensive overview of each of the sub-components. The framework is shown in order to give the reader some idea of the complexity underlying the cohesion concept, and some appreciation of the inherent difficulties in both defining and measuring it (Collins *et al.* 2007) [4]. Siebold (2005) [8] added affective cohesion and instrumental cohesion to the above distinctions. Affective cohesion refers to emotions and reactions, whereas the instrumental aspects relates to task.

2.2.8 Although the above are undoubtedly useful for researchers, Siebold (2005) [8] emphasised the need to recognise that cohesion in the military is distinct and unique. The group is part of a much larger, historical, highly regulated, and hierarchical organisation from which the group member cannot easily leave. Also, members tend to wear uniforms which denote rank and therefore, lines of subordination, with the group generally being dependent on strong leadership. More especially, there is a pervasive influence from life-endangering weapons and major combat systems, as well as the possible lethal threat from enemy forces. Because of the various ways in which the military differs from other organisations, findings from wider research may not be applicable to the military domain and vice versa (Siebold, 2005) [8].

2.3 Team effectiveness

2.3.1 Having a cohesive team is of little value if its attributes cannot be applied in some meaningful way such as achieving a goal or carrying out a task in an effective manner. Collins, Madigan and Wiedemann (2007) [4] stated that team effectiveness generally involves two related issues:

- Team performance in terms of the degree to which the team output (e.g. product, service, objective) meets the standards of quantity, quality, and timeliness; and

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- Team viability in terms of the degree to which members are willing to work together in the future.

- 2.3.2 The above are particularly important in the military setting where teams are often required to both work and live together for several months at a time.
- 2.3.3 Collins *et al.* (2007) [4] described a team effectiveness research model which is presented in Annex C. The figure gives some indication of the array of issues that combine to create an effective team. These include how organisational inputs (e.g. organisational structure and leadership) and team characteristics (e.g. team size, gender balance, experience and skills of team members) combine to influence the behaviours characterising the interactions between team members (team processes), which in turn affect team outputs such as performance and viability.
- 2.3.4 In Collins' model, cohesion is placed within 'team climate' along with motivation. Team climate is thought of as intangible as it is not easily observed in terms of explicit behaviour, and therefore not amenable to objective measurement. Consequently, building cohesion and motivation in teams requires a more subtle process. Collins *et al.* (2007) [4] stated that team leaders and trainers need to adjust various inputs such as team processes to build the climate within the team. Leadership is also seen as a major contributing factor and is discussed in more detail in section 3.4 of this report.

3 The 'front line' debate

- 3.1 Recent operational deployments in Iraq and Afghanistan have blurred the distinction of the traditional front line and the delineation of the combat zone. In current conflicts the enemy is dispersed across national boundaries, employ irregular tactics leading to asymmetric warfare (Golding, 2002; Burba, 2007; Michaud, 2009) [61][102][103]. Given that there are no true safe zones free from possible combat action, and all service members in all specialities are at risk (e.g. from rocket, mortar, and roadside bomb attacks, as well as ambushes), women are also now frequently finding themselves in the heat of battle (Harrell *et al.* 2007) [104].
- 3.2 This is partially brought about by the way the British Army system works, which is described in the Army Field Manual, Volume One, Part 6, and summarised by Fulford-Talbot (2006) [68]. Women in the British Army may be employed in any post within the Combat Support Arms (i.e. RA, RE, AAC, and Royal Signals), as members of the Combat Service Support Arms (i.e. RLC, AGC, REME), or attached to Combat Arms in the Regimental Admin Office (RAO) (i.e. as Clerks in the Rifle Companies, or as Chefs and members of the Light Aid Detachments (LAD)).
- 3.3 During peacetime the Army is arranged into Regiments and Battalions, with single units working together in barracks. However, during war fighting operations and the training/preparation for such roles, the above Arms units are mixed together to form battle groups. Therefore, female Artillery Forward Observation Officers (FOOs), Royal Engineer Troop Commanders, armoured vehicle drivers and others operating as part of armoured and infantry units may find themselves on the front line. In an ordered battle space women in these roles are unlikely to be exposed to close combat.
- 3.4 Given the current theatre Afghanistan and recently of Iraq, Combat Support Arms units, particularly RA units, are likely to be tasked to operate Out of Role (OOR) as ground holding units, traditionally the preserve of Combat Arm units. Therefore, a logistic convoy or a training team is as likely to come under attack as an infantry patrol and a headquarters location as much a target as a Rifle Company base. Of the 101 British Servicemen killed on operations in Iraq (as of 1 February 2006), approximately 50% were not in Combat Arms (Fulford-Talbot, 2006) [68]. In Iraq and Afghanistan, the U.S. situation often mirrors that of the British. Owens (2004) [105] argued that directly exposing women to combat situations would undermine the effectiveness of ground combat units by undercutting unit cohesion that is critical to achieving victory in war.
- 3.5 Key to this debate is what constitutes an offensive as opposed to defensive role. For instance, the division of Iraq into zones means that they can suddenly change from being classified as green (stable) or red (unstable) on any given day. Defining 'frontline' location is also difficult in the modern battlefield. (Burba, 2007) [102] describes how American defence policy was changed in 1994 as a result of the extensive roles played by women during Desert Storm in Iraq. The 'risk rule' was replaced by a 'direct combat assignment rule' that allowed all service members to compete for all those positions except those in 'units below the Brigade level whose primary mission is direct ground combat'. The military had the authority to close positions to women if 'the units and

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positions are required to physically co-locate and remain with direct combat units'. Redefining the term 'ground combat' (though based heavily on the 1992 Army policy) could also be seen as incongruous in terms of today's battle space, for instance:

“Engaging an enemy on the ground with individual or crew served weapons, while being exposed to hostile fire and to a high probability of direct physical contact with the hostile force's personnel. Direct ground combat takes place well forward on the battlefield while locating and closing with the enemy to defeat them by fire, manoeuvre or shock”.

- 3.6 Burba (2007) [102] argued that as the battlefield dynamics and operational environment have changed, location on the battlefield as defined in the above reference can place anyone in the theatre of operations in a direct combat zone. Given that Army units have a routine mission of 'repelling the enemy's assault by fire, close combat, or counterattack' it is easy to see how women may find themselves in a close combat situation.
- 3.7 In summary 'frontline' and therefore 'close combat' are becoming increasingly difficult to identify within modern conflict.

4 Experiences of other nations employing women in ground close combat roles or related combat environments

4.1 Introduction

4.1.1 This section describes the combat experiences of other nations and identifies government policies and publications relating to the employment of women in combat roles and combat environments. The focus was on changes that have taken place since 2002 and at the request of the Customer, to specifically include Australia, Canada, Czech Republic, Denmark, Estonia, France, Germany, Israel, Netherlands, New Zealand, Poland, Ukraine and the United States.

4.1.2 Contact with various countries was initially made via established international research collaborative panels in which Dstl are actively involved, i.e. the North Atlantic Treaty Organisation (NATO) Human Factors and Medicine Panel, and Technical Panel 3 of The Technical Co-operation Programme (TTCP) Human Resources and Performance Group (Military Human Resource Issues). Some useful links were also provided by Land Forces–Manning and the Dstl Military Advisor supporting this project. This mode of approach enabled contact to be made with a wide range of countries, including several additional nations to those identified by the Customer, which were: Belgium, Bulgaria, Greece, Hungary, Italy, Latvia, Lithuania, Norway, Portugal, Romania, Slovak Republic, Slovenia, Spain, and Turkey.

4.1.3 The Statement of Work from the MoD Customer requested that the following questions be addressed:

- What are the main changes in your academic literature since 2002 regarding the effectiveness of mixed gender teams in combat environments?
- Is your nation employing women in combat roles/environments?
- Has your nation reported difficulties with employing women in combat roles/environments?
- Has there been an effect on operational performance?
- Has team cohesion been assessed – if so how?
- How has operational performance of mixed gender teams been assessed?

4.1.4 Appropriate contacts within each nation were requested to supply information, wherever possible, to the six questions listed above. Additional information on relevant policies and reports were sought on the worldwide web. A full list of respondents is provided at Annex A. The collated information for each nation is provided below and shown in alphabetical order. The terminology used by other nations in their response (e.g. combatant, warfighter, warrior) has been retained so as not to misconstrue the meaning.

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4.2 Australia

- Australia **does not** employ women in close combat roles
- In September 2009, 92% of ADF jobs were open to females

Gender Data as at August 09:

	Navy		Army		Air Force		Total	
Male	10,665	81.7%	25,269	90.4%	11,911	83.2%	47,845	86.5%
Female	2,388	18.3%	2,689	9.6%	2,406	16.8%	7,483	13.5%
Total	13,053		27,958		14,317		55,328	

4.2.1 The current Australian Defence Force (ADF) Policy on the employment of women in the ADF is provided in a Defence Instruction (DI 32-1) issued in 1994 which states that the employment of service members is to provide equality of opportunity consistent with operational effectiveness (Wheeler, 2009). Men and women can compete equally for all employment except those involving direct combat duties. These duties are defined as those that:

- require a person to commit or participate directly in the commission of an act of violence against an armed adversary;
- expose a person to a high probability of direct physical contact with an armed adversary.

4.2.2 The Australian Defence Association has reported that the principles concerning female employment in combat manoeuvre, artillery and combat engineer units are based on experience and facts. The prime reason for their exclusion from these ground combat manoeuvre units is based on operational needs for levels of physical strength, physical power and load carrying stamina. Female casualties in such situations are therefore likely to be disproportionate to male ones because they would be unfairly exposed to higher risks than men doing the same job under the same conditions. Therefore for a range of operational, moral and occupational health and safety reasons the Australian Defence Association do not deem it fair on female soldiers to expect them to physically engage with enemy male combatants, directly, continually and as a permanent core part of their job.

4.2.3 However the issue of employment of women in close combat roles has recently been raised in Australia. A report by Canberra (Reuters) dated Sept 8, 2009 suggested that the Australian government was considering a change in its policy so that women could serve in frontline combat units in an attempt to ease a recruitment crisis. Junior Defense Minister Greg Combet was reported to say that all sections of the country's small but advanced military should be open to women, including special forces units currently fighting Taliban insurgents in Afghanistan. Mr Combet stated that 92 per cent of jobs within the ADF are already available to women and several have served in deployments in Afghanistan, Iraq and East Timor. Although women now make up around 13 per cent of ADF personnel, the Government would like to see the number increase.

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4.2.4 He stated that the only exceptions to employment should be where the physical demands cannot be met according to criteria that are determined on the basis of scientific analysis rather than assumptions about gender. A study has subsequently been initiated to develop a set of recruitment criteria that focuses on physical capability, independent of gender, age and rank. The Government will not make any changes to its current policy until these new physical standards are finalised,

4.3 Canada

- Canada **does** employ women in close combat roles
- In 2001, 1.9% of women were employed in combat arms occupations
- In 2005, less than 4% of officers and 2% of non-commissioned members were women were employed within the combat arms.
- In 2006, there were 7945 women in the CF regular force, representing 13% of the total force strength.
- In 2006, 3.8% of combat arms posts were occupied by women
- In March 2009, 17% of CF members were women

Gender Data as at March 09:

	Navy	Army	Air Force	Canadian Forces Total
Male				39,010 73.00%
Female				7,990 17.00%
Total				47,000

4.3.1 Canada supports the participation of women in all military roles, including combat. Following both political and legal pressure, the policy of integrating women stemmed from a 1989 decision of the Canadian Human Rights Commission (CHRC) Tribunal, which directed that women were to be fully integrated into all Canadian Force (CF) roles except service on submarines. The latter restriction was also removed by 2001. The Minister's Advisory Board on CF Gender Integration and Employment Equity was set up to transform beliefs about women's integration by the 'adoption of not only a policy, but also a belief in the need for a respectful workplace'.

4.3.2 From the outset there were CF perceptions of changes in operational effectiveness. Attitudes and beliefs continued to be sceptical of women's suitability and ability to serve in a combat role, believing that the military should be a uniquely male culture. Women who have served in the CF have therefore experienced sex and gender stereotyping.

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However they have developed strategies to negotiate and adapt to the CF culture, and over the years the CF has improved its understanding of the cultural changes through the increased representation of women in leadership roles and on operational deployments. Lessons learned in the CF from a gender integration perspective peaked in the late 1990s, as the ten-year period of full gender integration, directed by the CHRC, drew to a close.

- 4.3.3 A report from the Army Lessons Learned Centre in 1998 stated that cohesion of mixed gender combat arms units was a leadership challenge. In a non-homogeneous environment, there needed to be a search for common ground or a point on which all team members could identify, and it was considered a leadership responsibility to provide the framework and common ground to facilitate team building. The cause of breakdown in unit cohesion, especially where gender was concerned, was reported to stem from the following:
- Inequitable leadership and discipline;
 - Favouritism or harassment of distinct groups;
 - Fraternalization (especially within the chain of command);
 - Isolation and segregation of distinct groups.
- 4.3.4 The report identified that successful integration of women required all members of the Army to achieve one standard that met operational requirements and that everyone was treated equitably. Knowledgeable, proactive and effective leadership, particularly at the levels where integration was occurring, was acknowledged to be the fundamental element to ensure the initiative was successful.
- 4.3.5 By 1999, the CHRC was satisfied that there was sufficient leadership commitment to gender integration to remove the requirement for external monitoring of military efforts on the gender front. The CF adopted an approach whereby if behaviour changed first, then attitudes would follow over time. The introduction of women, despite some resistance, has been reported to have provided the opportunity for women to contribute to the evolution of culture across the organization and to operational effectiveness.
- 4.3.6 Since the 1989 court ruling Canada has made considerable strides in gender integration but there remain areas where integration and acceptance are reported to be ineffective. An analysis of Canada's experience in 2002 stated that 'the degree to mixed gender integration has occurred in the CF has been significantly overstated for the combat arms'. Despite women's service in the combat arms in Canada, women have not served in the so-called 'assault' roles in Canada's elite anti-terrorist unit Joint Task Force (JTF) 2. Although women are not formally excluded from such roles, the physical standards have been set so high that very few women are expected to meet them and, if they do, to subsequently complete the training process that functions to 'weed out' candidates. The question has therefore been raised as to whether the standards being applied for entry into this unit reflect actual requirement of the post or not.
- 4.3.7 A number of studies were commissioned in 2004 to support the Canadian Army Campaign Plan strategic objective of 'Shape Army Culture'. One of these studies examined acceptance of gender integration. Analysis of the data revealed that Army

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personnel reported to be neutral to positive on ratings of gender integration, and as rank increased acceptance of women increased. Corporals found the presence of women in the Army acceptable but tended to believe that their presence in combat was unacceptable. The ranks of Chief Warrant Officer, Lieutenant Colonel and Colonel assessed men and women as equally capable. Operational combat units were the least accepting of women, rating their presence unacceptable in combat and the integration process as only marginally successful. While personnel from all Land Force Areas (LFA) expressed acceptance of women, Land Forces Western Area (LFWA) was more guarded and rejected (although not strongly) women in combat and refused to confirm that gender integration was 'going well'. Women participating in the study rated gender integration more favourably than the men, and reported the integration process to be progressing better than the men did. One area in which men and women came close to agreeing was on the issue of women in combat. Neither group offered unbridled support for the concept although women were more enthusiastic than the men.

- 4.3.8 There is evidence that the Canadian population are becoming increasingly accepting of women in combat roles. In May 2006, when Captain Nichola Goddard became the first woman in Canadian history to be killed while serving on the front line in a direct combat role against the Taliban, it was noted that Canada's response did not focus on the issue of gender but rather that the country had lost a competent dedicated soldier. The number of females employed in combat remains small, but 2 of the 125 Canadian casualties in Op Herrick to date have been females.
- 4.3.9 Canadian research suggests that women are more likely than men to serve in supportive military roles than in operational roles such as the combat arms and are relatively more likely to serve in the Air Force than in the Army (Schipke Ralf, 2009). Whilst from a historical perspective there has been significant success with the integration of women into the combat arms, progress has been slow especially when considered in comparison with the progress of women into previously male dominated roles in the civilian domain. As of March 2009, 17% of CF members were women. However, despite all the efforts conducted towards the full integration of women in the CF, the number of women who are part of the combat arms remains very low. A 2007 report (ref: Major L Bourgon, The CF as an employer of choice: The key for a successful gender integration, Canadian Forces College, April 2007) showed that the percentage of females in combat arms occupation had only increased from 0.3% in 1989, to 3.8% in 2003 and had remained at 3.8% in 2006. The same report also revealed that the female attrition rate for combat arms occupations between 1989 and 2001 was 19% compared to 8% for males. The main reasons for CF women leaving the force have been directly linked to their family responsibilities.
- 4.3.10 Canada have used an instrument named the Human Dimensions of Operations (HDO) model (see section 2.6.2 above) in theatre. This model developed by Murphy and colleagues investigates the effects of stress on personnel. It indicates that stressors may have an effect on outcomes (e.g. strain, morale and cohesion) and that this relationship between stressors and negative outcomes may be moderated by factors such as coping strategies, available resources and interventions. Communication with Chief Military Personnel, National Defence, Ottawa has confirmed that it has not been possible to assess the impact of gender on operational performance using the HDO model, due to the small number of women employed in combat roles. However, there have been no reported difficulties with employing women in these environments.

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4.3.11 In recent consultation with the Canadian Expeditionary Force, Subject Matter Experts, and Analysts in the Canadian Army Lessons Learned Centre it has been reported that there have been no gender-related issues arising from current expeditionary operations, or awareness of evidence that gender integration has had a negative effect on operational performance or team cohesion. In practise, adjustments are made to accommodate the successful functioning of mixed-gender units in operations, but in most cases problems are resolved 'on the ground'. Recruitment of women to the combat arms is progressing at a slow pace, but the view from the Gender Integration Office is that the Canadian experience would not contribute to arguments justifying the exclusion of women from ground combat roles. As the CF has not applied any gender-based restrictions on employment since 1989, from a policy perspective the integration of women into the combat arms is now considered a fait accompli. Thus, they consider that there is no formal requirement to continue monitoring the effects of gender integration on operational performance or team cohesion, because the principle is no longer considered to be an issue.

4.4 Czech Republic

- The Czech Republic **does not** employ women in close combat roles

4.4.1 Whilst the Minister of Defence has issued guidelines concerning the promotion of equal opportunities for men and women working in the Czech Armed Force and women participate in military units which are included in the international corps, such as NATO, the Czech Republic doesn't employ women in combat and so they are excluded from units where participation in combat is expected. This info came from a contact in CZ MOD whereas literature would suggest that women can serve in combat arms occupations.

4.5 Denmark

- Denmark **does** employ women in close combat roles

Gender Data as at March 09:

	Navy		Army		Air Force		Total	
Male	3,243	94%	8,208	96%	3,255	92%	14,706	95%
Female	207	6%	342	4.0%	283	8.0%	832	5%
Total	3,450		8,550		3,538		15,538	

CONTINGENT ¹	NUMBER OF WOMEN IN 2007	NUMBER OF WOMEN IN 2008	NUMBER OF WOMEN IN 2009
KFOR	47	75	58
IRAQ	29	6	3
ISAF	19	39	67
TOTAL	96	120	128

4.5.1 Denmark adopted a policy of total inclusion in 1988 following combat trials in 1985 and 1987 exploring the capabilities of women in combat. Danish research showed that women performed just as well as men in land combat roles. Denmark has different physical requirements for men and women in the Armed Forces, but the requirements for the more physically demanding roles do not differ. Although all posts are open to women, the physical demands have to date prevented women from joining the special operational forces. During deployments, there is no gender-related differentiation between roles and functions performed by men and women. Women are treated and regarded as normal soldiers who are expected to perform as trained, and to participate in all operations on equal terms with their male counterparts. Women have been employed in combat in Afghanistan whilst undertaking a variety of functions from administration to Combat Commander. This number has increased, possibly as a result of an overall change in the number of women serving in the Armed Forces increasing from 715 in January 2007 to 780 in January 2008, and then to 832 in March 2008. As far as the Danish Personnel Policy Section of the Danish Defence Personal Organisation are aware there have been no reported difficulties with employing women in combat roles. Although team cohesion and operational effectiveness have not been assessed, there have been no reports to indicate that this may be an issue.

¹ (note includes administrative roles)

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4.6 Estonia

4.6.1 Estonia currently **does not have any policies** relating to women in combat roles and has no relevant experiences in this area.

4.7 Finland

4.7.1 Finland **does** employ women in close combat roles

4.7.2 All services and units in the Finnish Defence Forces and the Finnish Border Guard accept females. All deployments are open to women, provided they have had the necessary military training.

4.8 France

- France **does** employ women in close combat roles
- In 2006 19% of French military personnel were female.
- In 2006, 1.7% of combat infantry soldiers were female

4.8.1 A recent study in 2006 showed that women represent 19% of all French military personnel. They are allowed to serve in all posts (including combat infantry), except submarines and riot control gendarmerie. However, they still represent a small part of personnel in specialities such as combat. Only 1.7% of combat infantry soldiers are female.

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4.9 Germany

- 4.9.1 • Germany **does** employ women in close combat roles

Gender Data as at September 09:

	Navy	Army	Air Force	Total
Male	21,990	149,682	56,377	
Female	2,157	10,174	4,162	16,687
Total				

- 4.9.2 It was not until 2001 that women first joined German combat units, following a ruling by the European Court of Justice which ruled that preventing women from occupying combat roles in the Armed Forces was against gender equality principles. This ruling from the Court came about following a complaint by Tanja Kreill, an electrical engineer, whose application to join the German Army was rejected by the Defence Ministry in 1996. The consequent amendment to the constitution allowed women to embark on any military career they chose, including elite units such as the marine commandos. Germany had long opposed allowing women into its front-line combat forces, and even towards the end of World War II the Nazi leadership did not call upon women to assist in the desperate effort to stop the Allied advance. The new ruling, therefore, initially did not receive full military support, but after several years resistance decreased.
- 4.9.3 As a consequence of opening all posts in the German Armed Forces to women, the Bundeswehr became a more attractive career option to females, and the number of women in the German Armed Forces is now three times as high as it was in 2001. However although there are no restrictions regarding the branch of service, most women are interested in joining the Medical Service, Staff Duty and Logistics and only a few want to serve in combat units. Approximately 800 female soldiers are currently in combat units. Women are regularly being sent to foreign deployments, and as at September 7th, 2009 the number of German soldiers attached to the International Security Assistance Force (ISAF) in Afghanistan were 4,200 of which 194 were women. Currently there are 30 women deployed in the dangerous area of Kunduz, but this low number is simply a reflection of low availability, rather than tactile or legal reasons.
- 4.9.4 Those females that have been involved in combat in Afghanistan, have not been specifically deployed in close combat roles but have been employed as medical personnel, military police or logisticians and have been part of a patrol or convoy. There is no specific reason for this and it could change within the next contingents. The Joint Commitment Staff (DEU MoD) have stated that there have been no reports of problems as a result of female soldiers being involved in combat situations.

4.10 Israel

- Israel **does** employ women in close combat roles

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- In 2006, 88% of military positions open for women and 2.5% of women served in 14 combat positions,

Gender Data as at September 09:	
UNITS OPEN TO WOMEN	% OF WOMEN IN UNIT
Light infantry	68%
NBC	16%
Anti-aircraft	16%
Rescue and saving N.O.C	19%
Shallow water diving	24%
Dog handling	16%
Artillery	17%
Pilots	23%
Border Patrol	10%

- 4.10.1 Within the combat arms most of the combat positions are closed to women and those that are open are not defined as 'close combat roles.' These include light infantry, NBC, anti-aircraft rescue and saving, shallow-water diving, dog-handling, artillery, pilots and border patrol.
- 4.10.2 Most women serve in non-combat positions, consistent with gender role expectations, and are conscripted for two years (instead of three for men), mostly undertaking clerical, teaching, social welfare and other supporting functions. Only 33% of personnel in the Israeli Defence Force (IDF) compulsory service are women. The lower figure, compared to men, is due to the shorter length of service for women and there is a more lenient discharge system based on religious grounds.
- 4.10.3 It was around 1995 that the IDF began incorporating women in combat positions. This came about when a 23 year with a pilot's licence from her native South Africa, immigrated to Israel and applied to train with the Air Force. She was automatically rejected on the grounds that women were not allowed to serve in combat positions and so Alice Miller appealed to the Israeli Supreme Court. As a result of the Supreme Court's ruling there was an amendment to the Army Service Law which stated that women were equal to men in their right to serve in every position in the army excluding positions whose demands precluded women from doing so. As a result the IDF integrated women into some roles in the artillery and light infantry.
- 4.10.4 A 2006 publication on trends in women's service in the IDF reported that since 1996 there had been an increasing trend to abolish the structural exclusion that prevented women from serving in different positions. 88% of military positions were open for women, and 2.5% of women served in 14 combat positions. Considerable efforts were

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made to put an end to every gender distinction in the list of military positions and only 12% of military positions remained unavailable for women. Within the Army these were combat positions in the armoured corps, infantry and the engineering corps (apart from light infantry and NBC purification soldiers). Some of the positions that are currently closed may be opened in the future so as to create an environment that enables women to successfully progress in their military career. It is considered likely that very few positions will remain closed, and if so this will be due to factors such as high physical intensity or an inability to ensure minimal privacy. Although the bureaucracy in the traditional structure has built up gender barriers, there is a commitment to the equal opportunities principle and the expectation is to activate military practices that will employ according to individual skills and abilities and not according to gender.

- 4.10.5 Women serve in combat roles voluntarily, and women that do volunteer share the same rights as their male counterparts. The majority of female combatants are found in the Caracal regiment and the Border Patrol. A recent study has examined the integration of female combatants in the IDF and is based on numerous sources of information available between 2002 and 2005. It reports that during service Commanders have recognised that female combatants often exhibit superior skills in areas such as discipline and motivation, maintaining alertness, shooting abilities, managing tasks in an organised manner, and displaying knowledge and professionalism in the use of weapons. Despite this, these females often face an ongoing battle against scepticism and mistrust in the form of teasing from their fellow male combatants and negative messages from high ranking officers. This resistance to their presence on the battlefield seems to stem from a perceived threat to the historical male combat identity. The study also revealed differentiating practices such as: limiting the number of combat positions to which female combatants can apply (even in the units in which they are incorporated); limiting the number of female combatants allowed to enter areas considered to be dangerous; refraining from allocating more combat-orientated tasks to mixed-gender units; isolating female combatants and marking boundaries for living and working zones; and removing female combatants from units or areas in which yeshiva boys are present. Some of these practices are found in military laws and can be justified for various reasons, but others are not and have come into existence by various means such as latent practices and orders from Senior Commanders.
- 4.10.6 Although in theory Israeli women can volunteer for combat assignments, it seems that in practice the IDF may not accept all eligible women. There is further evidence for this in a report that suggests the IDF select numbers that it needs to meet personnel quotas each year, but once a combat unit is deployed women soldiers are evacuated.
- 4.10.7 As far as the women are concerned it makes little difference where the negative attitude towards them comes from, but it leaves them feeling angry and frustrated, their confidence is undermined, and a strong need to prove their abilities in combat is felt. Motivation to serve in combat positions is relatively high, and as many as 20% of prospective female soldiers have listed combat as one of their main preferences. However, the difficulties faced by female combatants has taken a motivational toll, and between 2005 and 2006 the number of women with a desire to serve in a combat role decreased. This may be a result of a decline in initial enthusiasm, with the realisation that many women would find it difficult to cope with the demands imposed by combat positions. However, it may also be partly due to the military's attitude towards female combatants, which are passed on from female combatants to prospective female soldiers.

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- 4.10.8 Interviews with female combatants who participated in the Second Lebanon war, revealed that they took part in ‘special cohesion’ days and that they were familiar with most of the male combatants who served with them when they were in compulsory service. Their absorption in the units was reported to greatly depend on the Commanders. If the Commander was to express belief in their ability and considered them to be equal to their male counterparts, then they would eventually become ‘one of the gang’.
- 4.10.9 Surveys of females serving in combat roles in the IDF have therefore concluded that whilst the incorporation of female combatants has been a success, there is still much progress to be made with regard to allowing them to utilise their full potential.

4.11 Netherlands

- The Netherlands **does** employ women in close combat roles

- 4.11.1 With the exception of the Marine Corps and the Submarine Service, all military posts are available to women. These two services have remained closed to women on the grounds of physical requirements and combat effectiveness, or for practical reasons, as in the case of submarines.
- 4.11.2 Despite the opportunity for women to serve in combat units, there are very few women employed in these branches. Most women deployed to theatre have served in logistic and combat support units. Approximately 13% of all female soldiers in the army are within combat units, whereas the percentages of women in combat roles within the Navy and Air Force are much higher (33% and 21% respectively). The Netherlands initiated the EU-funded Gender Force Project (2005-2007) to accelerate and intensify the gender policy process. This policy is not only about creating and promoting women to higher positions, it is also about recognising the cultural and social meaning of differences in gender, removing barriers and making optimal use of the differences and the associated competencies. The Armed Forces are reported to benefit from mixed teams as they can deliver an improved performance, particularly in crisis–response and peacekeeping operations.
- 4.11.3 The Netherlands, have recognised that females possess useful psychological attributes such as negotiation and communication skills, and actively comply with the United Nations resolution 1325, which is intended to reinforce the role of women in conflict resolution, by integrating gender perspectives into peacekeeping operations. Indeed with regard to provincial reconstruction teams in Afghanistan, gender is considered as an integral part of the analysis and planning processes. As a result of the Dutch Ministry of Defence instructions on gender policy, a gender checklist was approved in 2008. This checklist set out the need to identify the gender-related effects of an operation, and to consider whether deploying females and using a gender approach would improve the execution of the military instruction.

4.12 New Zealand

- New Zealand **does** employ women in close combat roles

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Gender Data as at June 09:

	Navy		Army		Air Force		Total	
Male Officers	1,625	77%	4,330	87%	2,129	82%	8,084	83%
Female Officers	479	23%	673	13%	466	18%	1,618	17%
Total Officers	2,104		5,003		2,595		9,702	
Male NCOs	1,236	76%	3,642	87%	1,571	81%	6,449	83%
Female NCOs	391	24%	534	13%	368	19%	1,293	17%
Total NCOs	1,627		4,176		1,939		7,742	
Total	3,731		9,179		4,534		17,444	

- 4.12.1 New Zealand has no restrictions on roles for women in its defence force. They are able to serve in the Infantry, Armour and Artillery as a consequence of legislation that came into effect in 2001. The New Zealand Defence Force (NZDF) formally rescinded its policy of not allowing women to serve in combat roles in a directive (Defence Force Order 005/2000) in which the Chief of Defence Force, Air Marshal Adamson, noted that while he recognised that section 33 of the Human Rights Act 1993 allowed preferential treatment in favour of men, he had decided not to use the provision as it would allow the Services to adopt ‘ a more inclusive approach to the employment of women in combat roles’ He attributed his decision to a variety of factors including changes to the nature of the operational service, cultural moves, funding levels, demographics and a more positive attitude to the employment of women in non-traditional roles. As at May 2004, there were nine female gunners, three riflemen and one field engineer serving in the NZDF.
- 4.12.2 In 2005, the Chief of Defence Force commissioned a comprehensive review titled ‘Review of Progress in Gender Integration in the NZDF. The report states that the NZDF has moved beyond much of the international debate which is still focused on whether women should be involved in combat. It identified that the integration of women into combat trades needed a deliberate and concerted effort, since there had been variable success in attracting and recruiting women to these areas. The review concluded that the NZDF had made substantial progress in gender integration in terms of improving the representation of women, developing a culture that accepts and values women as well as men, and integrating equity principles and consideration of gender into some management systems and processes. Some of this progress was made in response to societal changes with regard to the role and potential contribution of women, but it also came about as a result of clear leadership about the issue. However areas for improvement were recognised and actions were recommended to take the NZDF even closer to the full integration of women. These were designed to ensure that:
- Each of the Services took active ownership of the issue
 - All relevant NZDF policies considered the integration of gender equity

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- Progress was monitored robustly

4.12.3 The New Zealand experience is that while combat trades are open to women, given the nature of operations the NZDF is presently involved in, they have not conducted any specific research into the effectiveness of mixed gender teams in the combat environment. Joint Headquarters NZ have reported that currently women are serving in so-called 'combat roles' in all three services, where their definition of close combat would relate to roles that carry a high threat level. Joint Headquarters NZ have reported that currently women are serving in so-called 'combat roles' in all three services, where their definition of close combat would relate to roles that carry a high threat level.

4.13 Norway

- Norway **does** employ women in close combat roles
- Gender data as at 2006 (where figures relate to females having a military career as opposed to women volunteering for military service as conscripts):

Gender Data as at 2006 (where figures relate to females having a military career as opposed to women volunteering for military service as conscripts):

	Navy	Army	Air Force	Home Guard	Logistics	Total	
Male						6,425	93.4%
Female	115	132	83	13	111	454	6.6%
Total						6,879	

4.13.1 In 1985, equal opportunities legislation was applied to the Norwegian Armed Forces, and Norway became the first country in NATO to allow women to serve in all combat functions including service in submarines. Norwegian women are permitted to serve on a voluntary basis, but in the event of national mobilization will be put under the same pressures as men. Those who have not undergone military training will be asked to serve in a civilian capacity rather than a military one. Recent communication with the Norwegian Defence Force has established that although there have been no formal assessments of the effect of mixed gender teams in the combat role, the general opinion is that female representation will increase operational effect. No incidents have been reported to indicate that cohesion will decrease and operational effectiveness be compromised. The Personnel Division of the Norwegian Defence Force report that as far as they are aware none of their female soldiers has experienced actual ground close combat. However, they do participate in patrols in Afghanistan, which is their primary reference to a combat situation today.

4.14 Poland

- Poland **does** employ women in close combat roles
- In December 2008, there were 1153 women serving in the Polish Army (~1%)

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- 4.14.1 In 2004, Poland passed a law that requires all women with college nursing or veterinary degrees to register for compulsory service. In addition Poland allows women to volunteer and serve in all services of the army. Discussions with personnel in the Polish Ministry of Defence (personnel communication, Capt Bożena Szubinska, Plenipotentiary of Ministry of National Defence for women military service, 2009) has elicited that Poland does not have a long history of women in military service, and it wasn't until 1999 that females were accepted into military schools. It was only after 2003 when female graduates had completed their 4 year training at military schools, and later military academies/universities, that they assumed military posts. Nowadays there are about 90 such graduates each year, and they represent a vast range of specialists in various corps: Armored and Mechanized Forces, Radiotechnical Forces, Missile and Artillery Forces, Logistics, Defense against WMD, Military Police, Communications and IT Forces, Air Force, Navy, Medical Forces.
- 4.14.2 As at 31st December 2008 (Personnel Department of MoD) there were 1153 service-women in the Polish Army, and within the last 2 years female platoon commanders have been deployed to Polish military contingents (PKW) in Iraq and Afghanistan. The range of posts to which women are designated on missions has been enlarged because they now possess useful qualifications. One woman is serving in a combat role within an armoured unit in Świętoszów.

4.15 Romania

- Romania **does** employ women in close combat roles

- 4.15.1 There are no distinctions between Romanian men and women with regarding to employment in combat roles. The selection of military personnel is conducted on a voluntary basis, with equal opportunity. Romania has sent 58 women to Iraq in close combat positions, which represents 5.3% of the total of personnel employed in these positions. In Afghanistan it is around 6.8%. The Romanian Armed Forces have not encountered any difficulties relating to women's employment in combat roles or environments, nor have they experienced any impact on operational performance. Team cohesion is not reported to suffer as a result of having mixed gender combat team and the general view is that missions undertaken by these teams have been successfully achieved.

4.16 Spain

- Spain **does** employ women in close combat roles

Gender Data as at October 2008):

	Navy		Army		Air Force		Home Guard		Total	
Male	17,057	88%	70,664	88%	20,013	88%	2,834	82%	110,568	88%
Female	2,326	12%	9,636	12%	2,729	12%	622	18%	15,313	12%
Total	19,383		80,300		22,742		3,456		125,881	

- 4.16.1 The publication of the Armed Forces Personnel law in May 1999 eliminated any kind of gender discrimination, and women were allowed to join all positions in any service in the Spanish Forces.

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4.17 Sweden

- Sweden **does** employ women in close combat roles

4.17.1 Since 1989, there have been no gender restrictions to any positions in the Swedish military. Women are allowed to serve in all parts of the military, including combat. The Swedes have reported explicit experiences in Afghanistan, where women have demonstrated positive operational effects. For example, through the contact between Swedish military females and local Afghan females, IED's and suicide bombers have been discovered and neutralized.

4.18 Ukraine

4.18.1 Following the dissolution of the Soviet Union and the declaration of Ukrainian independence in 1991, Ukraine established its own army. In March 2008, fifty thousand women were serving and working in the Ukrainian army, mostly in liaison, medical and accounting roles. Currently about eighteen thousand women are in actual service.

4.19 United States

- The United States **does not** employ women in close combat roles

Gender Data as at 2007:

	Navy		Army		Air Force		Marine Corp		Total	
Male	239,694	85%	374,984	87%	210,777	89%	156,173	94%	981,628	88%
Female	41,144	15%	58,117	13%	25,595	11%	10,568	6%	135,424	12%
Total	280,838		433,101		236,372		166,741		1,117,052	

4.19.1 In 1994 The Secretary of Defense lifted the 'risk rule', which had previously prevented women from serving in units which had a high probability of engaging in combat. This was partly in recognition of the fact that given the changing nature of warfare there was no longer any 'safe' places on the battlefield. Units, such as, division military police companies, divisional forward support battalions and military intelligence collection became open to women but they were still prohibited from serving in small direct ground combat units that engaged in deliberate offensive action against the enemy.

4.19.2 The most recent version of the Department of Defense (DoD) policy specifically states 'Service members are eligible to be assigned to all positions for which they are qualified, except that women shall be excluded from assignment to units below the brigade level whose primary mission is to engage in direct combat on the ground...' The policy defines direct combat as 'engaging an enemy on the ground with individual or crew served weapons, while being exposed to hostile fire and to a high probability of direct physical contact with hostile force's personnel. Direct ground combat takes place well forward on the battlefield while locating and closing with the enemy to defeat them by fire, maneuver and shock effect'. The policy also adds additional restrictions as follows:

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- where the costs of providing appropriate berthing and living arrangements are prohibitive (i.e. submarines and small surface vessels such as mine sweepers, mine hunters and coastal patrol ships);
- where units and positions are required to physically collocate and remain with direct ground combat units;
- where units are engaged in long range reconnaissance operations and Special Operations forces missions;
- where job related physical requirements would exclude the vast majority of women service members.

4.19.3 Consequently, women enlisted soldiers cannot serve in Infantry, Special Forces, Artillery, Armour and Air Defence artillery, and are excluded from serving in support units that collocate with any of these ground combat units. At the 1994 DoD news briefing, defence officials reported that ‘integrating women into ground combat units would not contribute to readiness and effectiveness of those units’ due to the nature of direct ground combat and the way individuals need to perform under those conditions. The reasons given for the exclusion of women from combat roles was based on the arguments that women lack the physical strength to be effective in ground combat, they are not emotionally tough or aggressive enough to fight effectively, and that mixed gender units will undermine the ‘male bonding’ that is needed in combat units. The latter reason, that unit cohesion and therefore operational effectiveness will be compromised, is one major reason why gay men and lesbians are still not allowed to serve openly in the US military.

4.19.4 In 1998, approximately 46% of the positions closed to women were associated with the direct ground combat exclusion policy. At that time there was no intention to reconsider the policy since DoD’s rationale for excluding women from direct ground combat remained the same as it was in 1994. The DoD’s view was that there was 1) no military need for women in ground combat positions because an adequate number of men were available, 2) the idea of women in direct ground combat continued to lack congressional and public support, and 3) most servicewomen didn’t support the involuntary assignment of women to direct ground combat units. The DoD’s perception of the lack of public support was partly based on the results of a survey undertaken in 1992 for the Presidential Commission on the Assignment of Women in the Armed Forces. The lack of support for involuntary assignments to ground combat positions was reported in 1997, when most servicewomen expressed the view that while ground combat positions should be open to women, such positions should be voluntarily assigned. DoD also cited the department’s lack of experience with women in direct ground combat, as well as observation of the experience of other countries as the rationale for continuing the exclusion of women from direct ground combat.

4.19.5 More recently, the discussion of the ground combat exclusion policy has been complicated by a significant transformation in Army organisation and warfighting concepts. The Army changed to a modular organisation of Brigade Combat Teams (BCT) in an effort to become a lighter agile force. In this new organisation, the current combat restrictions for women were harder to comply with without closing a significant number of positions open to women. The Army circumvented this by assigning all

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forward support companies to the brigade level in the BCT construct. In Spring 2005, this motivated the Chairman of the House Armed Services Committee (HASC) and the Chairman of the HASC sub-committee on Military Personnel to introduce a no-notice amendment to the Defense Authorisation Bill to preclude DoD from opening new positions to women without an act of Congress. The move provoked strong objections, by military leaders who reported that if the amendment was passed it would close a total of 21,925 places open to female soldiers and undermine the recruiting, morale and careers of professional military women. The final amendment was therefore a compromise and mandated that the DoD gave 60 days notice (instead of the prior 30 days) notice to Congress before opening or closing of new positions or units under the existing ground combat exclusion policy.

- 4.19.6 A RAND² report on assessing the assignment policies for army women was commissioned in 2006 by the Under Secretary of Defense for Personnel and Readiness. This was a consequence of the HASC debate and reports that female soldiers were being placed in certain combat-located support units that were required to be all male. The RAND report noted that there are several important differences between the Army and DoD policies. Firstly the DOD policy restricts the assignment of women to units whose primary mission is direct round combat, whereas the Army restricts assignment to units that have a routine mission of direct combat. Secondly, the Army also restricts assignments to units that collocate with direct combat units. Third, the Army and DoD policies define direct combat differently, whereby the Army includes repelling the enemy's assault and risk of capture. The authors therefore question whether the Army and DoD assignment policies are clearly understandable. Their interviews with senior personnel from the Army, Office of the Secretary of Defence, Joint Staff and personnel returning from Iraq suggested that there is no shared interpretation of the many words used in the policy, including 'enemy', 'forward' or 'well-forward', and 'collocation'. The research also revealed that women are not assigned to maneuver units below the brigade level, to comply with the DoD and Army assignment policy. However, it was established that under certain circumstances, support units to which women were assigned were in close relationship with maneuver units, whereby they were actively involved in routine self-defence missions that included providing security for their units, providing personal security for leadership and, in some cases, providing security for other support units. There was also considerable evidence that women in support units were collocated with direct combat units if the definition of 'collocation' was based purely on proximity. However, if the definition was based on interdependency as well as proximity then the evidence was inconclusive.
- 4.19.7 The overall conclusion from this study was that the application of the current assignment policy had led to the employment of units, including women, in ways that are consistent with DoD policy but might not be consistent with the Army's assignment policy. Interviews and focus groups were consistent in reporting the maintenance of unit effectiveness and capability. Military effectiveness and flexibility have entailed adapting to changes in enemy strategy, tactics and weapons, which implies that Commanders may need to employ military resources, including women, in ways not initially envisaged in United States (US) policy. The concepts and language in the current policy are therefore considered to be less appropriate for current and future battlefield operations.

² The RAND Corporation (Research ANd Development) is a nonprofit global policy think tank first formed to offer research and analysis to the United States armed forces

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- 4.19.8 Whilst legally the position has not changed and women are still prohibited from being well forward on the battlefield, in reality, as today's battlefield is no longer linear, US servicewomen are vulnerable to being injured, killed or captured in theatre. As of February 12, 2007, seventy-five US military women had been killed in action in Iraq and Afghanistan and two had been captured as Prisoners of War. As of December 2 2006, more than 430 US women have been wounded in battle. Since these experiences indicate that anyone can find themselves in close combat, regardless of whether they are assigned to combat or combat support units, the US military is now training all troops in basic combat skills. Indeed recent comments on a military strategy page state 'Although by US law women are not allowed to participate in combat arms, it is understood that this only serves to keep women out of the combat arms, but not out of combat itself. This was particularly true in Iraq where non-combat troops were constantly attacked as they drove trucks in supply convoys. These convoys quickly acquired more weapons and combat training, and the women remained...'
- 4.19.9 One of the positions that is closest to combat for women in the US Army is within the Military Police, where women man machine guns on armoured Humvees. Although US Army regulations exclude women from infantry assignments, some female Military Police accompany male infantry units to handle search and interrogation of enemy suspects. Whilst these three-person teams are performing well in critical operations, it remains to be determined as to whether mission accomplishment is assisted or hindered by the presence of women. A recent article on a military website commented that the US army has found it useful to send a female soldier on raids in Iraq and Afghanistan, as they were better able to elicit useful information during these searches.
- 4.19.10 Whilst negative impact on team cohesion has been used in arguments to exclude US women from combat roles, a 1992 Presidential Commission report states 'there are no authoritative military studies of mixed gender ground combat cohesion, since available cohesion research has been conducted among male-only ground combat units'. Since then there have been only a few notable reports on the impact of women in the military on team cohesion. A RAND study conducted in 1997 and a Government Accounting Office study conducted in 1999 both failed to provide strong evidence that gender had an impact on team cohesion and perceptions of readiness. The RAND report concluded that 'division caused by gender were minimal or invisible in units with high cohesion'. The most important factor in unit morale was identified as leadership.
- 4.19.11 Since 1991, the sample survey of Military Personnel has tracked the attitudes and soldiers and has routinely reported on the changes and trends related to the integration of women and specifically on women in combat. The findings indicate that attitudes have become more positive. By 2001, over 70% of men taking part in the survey reported that having both males and females in the unit would have no impact or a positive impact on unit cohesion and work atmosphere. Most males disagreed that women did not have the physical strength, stamina or mental toughness to be effective in combat situations and 86% reported that their career plans would not change if women were allowed to be assigned to direct combat positions.

4.20 Summary

- 4.20.1 To date, many countries have made significant progress towards increasing gender integration in their militaries by removing limitations on the roles of women. For example, Canada, Denmark, France, the Netherlands, Norway, Israel and Germany all allow women to serve in their combat arms. The Nordic countries have perhaps been the most progressive within Europe, whereby they have adopted specific personnel policies allowing the total inclusion of gender-neutral armed forces. However, combat exclusions remain in place for other countries such as Australia and the US, where women are not permitted to serve in roles which are likely to expose them to a high probability of close physical contact with the enemy.
- 4.20.2 While many countries allow women to serve in combat roles, there has however, been slow progress with regards to recruitment, with women in these roles representing only a small percentage of the total number of females in the Armed Forces. Indeed, even in Canada which has been fully committed to the integration of women in combat roles there was only been an increased representation of 3.5% between 1989 and 2006. Israel and Canada have suggested that the reason for such small numbers includes factors such as family responsibilities, perceived difficulties in meeting the demands imposed by combat roles, not being fit enough to cope with the physical aspects, limited career progression, and the reported negative attitude from male members towards female combatants.
- 4.20.3 For some nations the removal of combat exclusion was a result of political and legal pressures imposed on the military. In Canada, for example, the employment of women in the combat arms was a direct result of a human rights court ruling. In these cases, the military have had to make large adjustments to facilitate the integration of women into environments which were traditionally and exclusively male. Experiences from countries, such as Canada and Israel, suggest that whilst some resistance to female combatants remains, the most important aspect of successful integration appears to lie with strong leadership, whereby women are treated as equals with the males in their unit.
- 4.20.4 Those countries that have a similar close combat role exclusion policy to the United Kingdom, argue that mixing gender is seen to disrupt a combat unit's '*esprit de corp*'. Both Australia and the US have raised the issue that women lack the physical strength to be effective in ground close combat. The introduction of mixed-gender teams into a combat environment would, therefore, be considered to have a detrimental effect on factors such as morale, health and welfare.
- 4.20.5 It is recognised that since many of the policies on the role of women in close combat were first formulated, there have been significant changes in the way in which soldiers engage the enemy. The policies on exclusion of women from close combat roles were instigated when there was a clearly defined front-line, but with the advent of asymmetric warfare many women in supporting roles have since found themselves drawn into close combat situations. Policies on the close combat exclusion of women may therefore need to be reconsidered so at the very least, the terminology used reflects both current and future battlefields.

5 Review of the Academic Literature

5.1 Introduction

5.1.1 This section presents the findings of the review of the open academic literature and where appropriate, internal MoD military reports. For the sake of brevity, details relating to the literature review methodology, e.g. approach, databases consulted, search terms used, etc. are described in full at Annex E. It can however, be stated at this early juncture, that the relevant robust scientific literature relating to the effects of mixed gender groups on cohesion and performance in a combat environment was sparse, and yielded little of significance.

5.1.2 The collated information was grouped under the main topic areas of the relationship between cohesion and performance, the effects of mixed gender teams on such attributes and the effects of leadership. To reiterate the customer stipulations in paragraph 1.4, this review did not consider physiological factors, analogous civilian situations, or the introduction of homosexuals within the UK Armed Forces. It should also be noted, that although this work focuses on literature published from January 2002 onwards, where a paper was found prior to this date and which was not referred to in the previous survey [1], the information was included if it was deemed relevant to the current work.

5.2 The relationship between cohesion and performance

5.2.1 Griffith (2007) [30] looked at cohesion and performance in military settings, and found an indirect relationship in that cohesion acts as a moderator rather than having a main effect. Griffith emphasised the following points:

- Cohesion is a performance enabler not an enhancer. For instance, cohesion maintains military performance in the face of extreme stressors such as battle. Cohesion increases solidarity which enables group members to deal with stressors and perform effectively.
- Social support and cohesion are both multidimensional and dimensions of each and functions of each overlap considerably. Empirical studies support the connection between cohesion in the military and social support.
- A meta-analysis (Beal, Cohen, Burke, & McLindon, 2003) [3] of 64 separate studies found three aspects of cohesion (interpersonal attraction, group pride, task commitment) to be independently and positively correlated with performance. Cohesion contributes to efficiency of achieving an outcome but not necessarily effectiveness. A stronger was found between cohesion and performance when performance was defined as a process rather than an outcome and when determined as a measure of efficacy rather than effectiveness (i.e. quality of output).

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- 5.2.2 Griffith (2007) [30] concluded that cohesion is a moderator that facilitates group maintenance which in turn supports effort (efficacy) though not necessarily performance, but which has a particularly beneficial effect during times of stress.
- 5.2.3 Wong, Kolditz, Millen & Potter (2003, cited by Griffith, 2007) [30] stated that the strength of interpersonal bonds among unit members better explains why soldiers fight (more than the impact of shared commitment to a task). Cohesion, or a strong emotional bond, is a crucial factor in combat motivation, and a strong determinant of successful military unit performance. MacCoun, Kier, and Belkin (2006) [31] argued that Wong *et al.* had little evidence to support this, claiming that their conclusions should be at best tentative due to weaknesses in their research design. MacCoun *et al.* stressed a distinction between social and task cohesion, arguing that it is commitment to a task rather than social cohesion that accounts for most of the variance in the cohesion-performance relationship.
- 5.2.4 It has been noted that excessive cohesion can result in groupthink and polarised attitudes and actions, which in turn can lead to defective decisions and judgments (Dion, 2004) [36]. Furthermore, in the face of failure, groups with high collective efficacy and cohesion are reluctant to deviate from their chosen course of action, and tend to assume a strategy of further commitment and intensification of effort (Whyte, Saks, & Hook, 1997) [37]. Hence group efficacy is not always an asset. In fact, group diversity can help prevent escalation of commitment and facilitate a realistic appraisal of the situation and de-escalation of commitment to a failing course of action (Whyte & Aver-Rizzi, 2000) [38].
- 5.2.5 Overall, the consensus within the research suggests a small but significant positive relationship between team cohesion and performance (Mullen & Cooper, 1994) [9]. Correlations between cohesion and performance are modest, for example a meta-analysis of fourteen studies resulted in a correlation coefficient of 0.36 (Evans & Dion, 1991) [10]. The strength of this relationship depends on the moderating effects of team size, degree of interaction, level of group reality, and the type of cohesion that is under consideration – task versus interpersonal. Team cohesion influences team performance through its effects on team coordination. High team cohesion improves coordination processes, which in turn improves performance on the task.
- 5.2.6 Team cohesion is closely related to collective orientation, which is characterised by a willingness to take into account input from fellow team members, and a belief that the goals of the team take precedence over those of the individual. Miles (2000) [11] found that these two constructs were highly correlated, were related in a similar way to team outcomes, and were represented by a single underlying factor.
- 5.2.7 Generally, cohesion is seen in positive terms but it is important to note that it may at times restrain innovation or over-emphasise conformity of thoughts and actions, and it may at times also support deviance (Siebold & Lindsay, 1999) [12].

5.3 Mixed gender group composition, cohesion and performance

- 5.3.1 In the review of the academic literature and the military reports no empirical scientific research examining the effects of mixed gender teams on cohesion in a close combat

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environment was found. However, for military, non-combat environments, research indicates that cohesion and bonding are not adversely affected in mixed-gender groups and that men and women can work together effectively, especially when women are not a novelty in a unit (Goldstein, 2001) [91].

- 5.3.2 Although it has been shown that the operational capabilities of a unit are not necessarily weakened by the presence of women, some feel that male bonding is central to unit cohesion and readiness (Harrell & Miller, 1997) [33]. However, a 1997 RAND study found that "gender differences alone did not appear to erode cohesion". Recruiting females did not reduce group cohesion and gender integration had little impact on readiness and morale; cohesion was more influenced by leadership and commitment to the groups' goals (Harrell & Miller, 1997) [33]. Bartone, Johnsen, Eid, Brun, and Labery (2002) [32] investigated factors influencing small unit cohesion for Norwegian officer cadets. Factors identified were shared experience of a stressful exercise and previous familiarity with other team members, the former accounting for most of the variance (although the two combined have more influence than either alone). Therefore, mixed gender training (i.e. a physically demanding exercise) and other opportunities for shared experiences are likely to increase cohesion.
- 5.3.3 Rosen, Knudson and Fancher (2003) [100] looked at cohesion and the culture of hypermasculinity (HM) in US army units, investigating why, in some circumstances the presence of females might reduce cohesion (as suggested by Rosen, Bliese, Wright, & Gifford, 1999) [101]. Bonding of males in all-male groups leads to HM (i.e. extreme, exaggerated and/or stereotypic masculine attributes and actions, which, in some circumstances, can have negative consequences). Rosen *et al.* (2003) [100] suggested that this could be balanced via the integration of females, including opening combat positions to women. They looked at military groups involved in combat arms, combat support and combat service support, finding that the presence of females led to reduced HM, and that this actually changed the relationship between HM and cohesion. They found that men in male-only units demonstrated more HM than in mixed gender units, and that group HM was associated with higher levels of cohesion in male-only units, but not in mixed gender units. They suggested that a culture of HM could be replaced with that of 'ungendered professionalism' as the bond that holds groups together, but cautioned that the maintenance of ungendered professionalism may work in garrison but may break down when deployed to a warrior environment.
- 5.3.4 Harries-Jenkins (2002) [96] found no direct evidence that women are likely to have a negative impact on combat effectiveness. Females served in combat roles in the U.S. military during the Persian Gulf war. Women were "killed, wounded and taken prisoner", yet there is no evidence that women had a negative impact on military effectiveness. In combat at a distance (combat aircrew and service on board ship), there was again no evidence of adverse effects, in fact women may have had a calming influence during periods of high tension. Feitz and Nagel (2008) [97] claimed that the U.S. deployed female soldiers in a variety of combat-related roles to Iraq (including security work, pilots, armoured vehicle drivers). They concluded that the inclusion of women did not undermine the US military masculine culture and mission. Moreover, Hoiberg (1991) [98] proposed historical evidence and general studies that indicate that females do not affect cohesion and bonding adversely, and Moskos (1985) [99] argued that mixed gender groups will develop into cohesive units. In fact, in a combat environment, when

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team members share a perceived external threat, this in itself is likely to unite a group further (Ziegler & Gunderson, 2005).

- 5.3.5 Simons (2001) [27] proposed that cohesion would be adversely affected by the integration of women into certain roles by: a) the reduced physical abilities (stamina and endurance) of women in terms of their ability to carry physical burdens necessary; b) forced intimacy and lack of privacy issues; c) the ‘natural’ responses of men to protect women; d) dysfunctional relationships (sexual misconduct); and e) pregnancy. Van Creveld (2000) [28] goes as far as suggesting that gender integration would create personnel problems because combat positions would be less attractive to men (thus leading to recruitment issues) and that those serving in combat roles would leave as a result of gender integration (thus creating problems with staff turnover). However, others argue that if the military focuses on unity and morale and the task in-hand, this will facilitate cohesion, effectiveness and performance irrelevant of group composition (Ziegler & Gunderson, 2005) [29].
- 5.3.6 A number of studies on the effects of mixed gender teams might on cohesion and performance have been carried out in non-military environments. For instance, Leon (2005) [92] examined examples of mixed gender events that required extreme physical abilities and psychological strength (such as North Pole and Antarctica expeditions). It was found that females had to try harder to prove themselves, and felt their opinions were not perceived as credible as those of their male peers, whereas men viewed women as more emotional and someone to share interpersonal issues with. Thus, males may benefit from having females in a team, whereas women have to work harder.
- 5.3.7 Problematic issues relating to mixed gender teams experiencing prolonged spaceflight missions have also been identified. All-male space expeditions elicit patterns of strong competitiveness and less sharing of personal concerns (Bishop, Grobler, & Schjoll, 2001) [94], whereas tensions in space and space simulations as a result of gender interactions have had a negative impact on group cohesion and task performance (Kraft, Lyons, & Binder, 2003; Sandal, 2004; both cited by Leon, 2005) [95]. However, in mixed gender missions females assume the role of peacemaker, and there is less competition and tension between males (Leon, Nist, & Magor, 2004) [95]. Female crew members exhibited sensitivity to, and concern about, other crew members’ interpersonal problems, although this was not reciprocated by male crew. It could therefore be argued that males may benefit from having a female in their team, whereas the reverse is not always true.
- 5.3.8 Finally, research examining diversity in group composition and cohesion in relation to walking performance with over one thousand walking groups (N= 6530) found that for task-related attributes (e.g. level of previous physical activity), diversity and performance were negatively correlated (i.e. there was no relationship) (Shapcott, Carron, Burke, Bradshaw, & Estabrooks, 2006) [34], although such correlations were small in magnitude Webber and Donahue (2001) [35]. For task-unrelated attributes (ethnicity and gender) diversity and cohesion were negatively correlated. However, gender diversity was unrelated to task performance in terms of walking distance (i.e. physical performance). This suggests that mixed gender group composition may impact on cohesion (said to be a relatively vague construct) but have no impact on group performance.

5.4 Leadership and gender

- 5.4.1 The place of leadership within the overall cohesion model is ably highlighted at Annex C. There is a small but developing research literature supporting this specific topic area, although this review identified very few references published post-2002. Therefore, where appropriate, some studies from the 1990s are referred to in order to support a line of reasoning.
- 5.4.2 Golding (2002) [61] quoted the study by the RAND Corporation which assessed the extent and effect of the integration of women in the military (RAND report 1997) [81]. Leadership was found to be one of the factors that determined how well units perform – not the presence or absence of women. Also, resistance to full integration of women into the military was seen to be more salient in those combat units that historically had not had women in them, with the officers leading these units historically having spent most of their career in an all male environment. Golding (2002) [61] stated that the most powerful and direct influence on organizational culture comes from within the officer corps, who turn values into action, bring coherence out of confusion, set the example, and articulate the viewpoint of the military institution. Therefore, if the leadership doesn't embrace change then it is highly unlikely that the rest of the unit will.
- 5.4.3 It is reasonable to suggest that gender stereotyping may have played a critical role in leadership appraisals and concepts, in that an 'effective leader' is seen in terms of masculine traits. Leader stereotypes may include physical characteristics (e.g. tall, broad-shouldered, loud voice), behaviours (e.g. touching or other non verbal behaviour during interpersonal interactions, conversational styles), and other attributes (e.g. interests, participation in specific social rituals, etc.), which may exclude women but have little to do with effective leadership (Boyce & Herd, 2003) [106]. Past research has demonstrated women's leadership effectiveness in many settings, and even in those studies where women were shown to perform less effectively despite engaging in equivalent leadership behaviours, gender differences were seen as a reflection of gender stereotype or bias rather than true performance difference (Eagly *et al.* 1995; Boldry *et al.* 2001) [107][108]. Boyce and Herd (2003) [106] found a continued disparity in men's perceptions between women and leaders, that greater experience of being led by a female leader did not influence men's masculine gender role stereotypes of successful leaders, and that successful female cadet leaders perceive successful officers as having characteristics commonly ascribed to both men and women.
- 5.4.4 Role congruity theory has been used to explain why women may not be perceived as leaders simply by virtue of their gender – unless they act in masculine ways. However, when women do act in masculine ways (e.g. autocratically), problems occur on the part of peers and supervisors between the perceptions of the appropriate roles for the two genders conflicting with those expectations regarding leaders (e.g. leadership ability and motivation) (Eagly, Karau, & Makhijani, 1995; Davis & Thomas, 1998) [107][109]. Women felt they had to become 'one of the guys' if they were to succeed, and dissociate themselves from their femininity and blend in, for example by wearing trousers rather than skirts (Yoder, 1999) [110]. Hopfl (2003) [112] claimed that women in the military careers can be either playthings or quasi male, becoming homologues or homomorphs of men, and in civilian organisations females have to 'deform' themselves into honorary men to occupy positions of influence (Saul, 1993, p. 35) [111].
- 5.4.5 A study of male junior combat officers in training revealed that they did not believe that women could become effective leaders as they did not possess 'command presence',

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therefore making it difficult for the troops to have confidence in their leadership abilities (Davis, 1997) [113]. A further study found that women cadets training at West Point became passive observers who were often criticized for their 'noncommand voices'. In addition, they felt over protected as cadets, a circumstance incompatible with the leadership role but one that conforms readily to the feminine role (Yoder, 1999) [110].

- 5.4.6 Barnes (2002) [64] raised the need for the military to be aware of the cultural aspects of female leadership and the context in which it is applied. For instance, during the conflict in the Gulf in 1991, the Arabs were reluctant to accept female officers as equals. This was due to a clash in cultural beliefs, and these situations need to be considered when deploying personnel for specific missions.
- 5.4.7 Some of the more recent research on gender and leadership in combat units has been undertaken by the Canadian military. It is worth noting that, given that the Canadian Forces (CF) fully integrated women into the combat arms in 1989 there are still very few women at the most senior ranks, i.e. 3.9% of Officers and 1.4% of Non-Commissioned Officers (Holden & Tanner, 2001) [114]. In addition, the attrition rate for women in the combat arms has been six times higher than that for men (Boyce & Herd, 2003) [106].
- 5.4.8 Febbraro (2007) [115] undertook a qualitative research study looking at effective leadership. Face-to-face interviews were carried out with eight female leaders of the rank of lieutenant or captain, employed in the Regular Force combat arms (i.e. infantry, armoured, artillery, and combat engineer), and based in a Mechanized Brigade. It was found that effective leadership was spoken of in androgynous terms, integrating both masculine (task-oriented) and feminine (person-oriented) characteristics. Personal leadership styles were perceived in terms of a mixture of both masculine and feminine, to be applied flexibly to different circumstances, and were developed to fit their own unique qualities in authentic ways, as opposed to trying to imitate others' (or masculine) leadership styles. High priority was placed on caring for the well being of their soldiers and on being professionals, both of which are key to effective leadership.
- 5.4.9 The female leaders perceived the resistance to women in leadership roles in the combat arms as including: gender stereotypes (e.g. being too emotional, being too-well treated, and being over protected); the perceived negative implications of women leaders adopting feminine styles of leadership; and, appearing too feminine (e.g. in terms of dress, make-up, etc. and being a sexual object).
- 5.4.10 Positive leadership practices included:(Febbraro, 2007) [115]
- expressing positive attitudes regarding women in combat roles
 - setting the example
 - not singling women out
 - accepting alternative leadership styles
 - refraining from gender stereotyping or the use of sexist humour/sexist language
 - demonstrating basic leadership competence

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- setting gender-neutral performance standards
- not defining gender integration issues as simply a women's problem
- communicating with followers
- acknowledging and dealing with gender differences
- understanding family issues

5.5 Summary

5.5.1 In summary, rigorous scientific research examining the effects of mixed gender teams on cohesion and performance in the combat environment was not found i.e. no research reports were found addressing this question. This may in part be due to the rather nebulous and multidimensional nature of cohesion as a concept and the fact that it is difficult to define and measure, particularly in terms of team effectiveness. This has consequently hampered the interpretation of the findings of the different scientific approaches coupled with differing definitions and measures of cohesion and effectiveness, making comparison across studies problematic.

5.5.2 Overall, there appears to be a positive relationship between team cohesion and performance. The research indicates that cohesion increases solidarity, particularly in the face of extreme stressors such as battle, and therefore helps maintain the collective effort, and to a lesser degree, effective performance. The strength of interpersonal emotional bonds among unit members has been posited as the reason why soldiers fight, e.g. combat motivation, although it has also been argued that it is the commitment to a task that is the determining factor. High team cohesion improves coordination processes, which in turn contributes to improved task performance. However, overly cohesive teams lead to a rigid and narrow team-centred approach that can result in the needs of the team superseding that of the wider organisations.

5.5.3 Within the non-combat military environments research indicates that cohesion and bonding are not adversely affected in mixed-gender groups and that men and women can work together effectively, having little impact on readiness and morale, especially when women are not a novelty in a unit. This is especially the case where there is a shared experience of a stressful exercise, e.g. in response to a perceived external threat, and previous familiarity with other team members.

5.5.4 In terms of non-military environments, especially those requiring extreme physical abilities and psychological strength, e.g. such as North Pole and Antarctica expeditions, females tend to have to try harder to prove themselves, their opinions are not perceived as credible as those of their male peers, and are viewed women as more emotional and someone to share interpersonal issues with.

5.5.5 Leadership was found to be a major factor in how well units perform – not the presence or absence of women.

6 Concluding Summary

- 6.1 This review was unable to identify any empirical, scientific data examining the effects of women in close combat teams, especially within the UK Armed Forces, and it appears currently that no such information exists.
- 6.2 Many countries do employ women successfully in mixed gender combat teams, the numbers are very small, and therefore, where research is feasible the small sample sizes would call into question the viability of statistically significant measurements in relation to cohesion and the impact on operational effectiveness.
- 6.3 Information provided by those nations that do employ women in combat roles suggests that there is little evidence of a negative impact on the effectiveness, cohesion or readiness of military teams, a finding which is supported by the academic literature.
- 6.4 Research examining diversity-cohesion and/or diversity-performance in non military environments has also led to mixed findings (Shapcott, Carron, Burke, Bradshaw and Estabrooks, 2006) [34]. LePine, Hollenbeck, Ilgen, Colquitt, & Ellis (2002) [89] contest that “it is extremely difficult to conduct rigorous research on gender composition and team performance in real organizational settings in jobs that are male-dominated” (LePine *et al.* 2002, p. 469, cited by Hirschfeld *et al.* 2005) [89][90].

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ANNEX A Measures of team cohesion

A.1 Reviewing measures of team cohesion

A.1.1 Despite the many studies carried out relating to team cohesion it still remains problematic, not only as a concept but also in how best to measure such a construct (Siebold, 1999; Guzzo & Dickson, 1996; Levine & Moreland, 1990) [14][15][16]. Notable attempts at some form of measurement/categorisation have included: group cohesion and suicide (Durkheim, 1897) [17]; military cohesion and German prisoners of war (Shils & Janowitz, 1948) [18]; cohesion in sports teams (Carron, 1982) [19]; and cohesion and military manning systems (Ingraham & Manning, 1981; Marlowe, 1985) [20][21]. The current review assesses several measures of team cohesion tools used in the military domain. Each tool is described and an assessment of its utility and effectiveness is provided.

A.2 The Command Team Effectiveness (CTEF) Model

A.2.1 The Command Team Effectiveness Model (CTEF) was presented by a multi-national team at the NATO Human Factors and Medicine Panel (087) in 2005 (Essens *et al.* 2005) [22]. This model is based on the premise that to be effective, commanders must understand a) conditions, processes, and outcomes, and b) the effect of modifying certain conditions on processes and outcomes. It is argued that effective commanders regularly review the task and team processes and make adjustments if possible. The CTEF model is designed to assist commanders to address the relevant factors in the control of effectiveness.

A.2.2 The CTEF model provides the framework for the assessment instrument in which the model is applied to assess, control, and improve the effectiveness of the team. It can be used at any time throughout a mission (before, during, after) to assess the status of the team as well as prepare for / review the structure and approach of the team to the mission. The results of the instrument can be used to analyse the team's performance and identify which elements require improvement in order to achieve effectiveness.

A.2.3 The model supposes that leadership style (command effectiveness) is most important in the outcomes of a team and its level of effectiveness. The results are used to provide a benchmark against which the impact of commander intervention can be assessed.

A.2.4 The model is limited in that it is based on the premise that effectiveness is directly related to achievement of goals and doesn't allow for variations and deviations from this. Nevertheless, it is a useful starting point for measuring effectiveness and captures the dynamic nature of missions and the need for review and feedback. The authors admit that this model is yet to be tested during operations and across different kinds of teams, and norms are yet to be developed. Its operational utility is therefore unknown and needs to be investigated further.

A.2.5 Although it is not a team cohesion measure nor a measure of the impact of gender differences, this model provides a good basis for assessing team effectiveness. With adaptation the model could be applied to assess the impact of mixed gender teams on the effectiveness of the team and could be broken down into constituent elements: conditions (mission framework, task, organisation, leader, team member, team), processes (task-focused behaviours, team-focused behaviours), and outcomes (task outcomes, team outcomes), together with the after-action review and feedback loops. This would enable the assessment of which element within the model was affected by the introduction of mixed-gender teams.

A.3 The Human Dimensions of Operations (HDO) Model

A.3.1 This model was developed by the Canadians as part of the HDO project in order to investigate the effects of stress on personnel (Murphy, Farley, & Dobrevá-Martinova, 1997) [23]. It indicates that stressors may have an effect on outcomes (e.g. strain, morale and cohesion) and that this relationship between stressors and negative outcomes may be moderated by factors such as coping strategies, available resources and interventions.

A.3.2 The model incorporates stressor, moderator, outcome and intervention components at the individual, group and organisational levels. It has been used to provide commanders with key performance outcomes such as morale and leadership. The project is ongoing and they are constantly reviewing and revising the model, collecting data from both deployed and non-operational personnel throughout.

A.3.3 This model also stresses the importance of command effectiveness and the role of the leader in developing a successful and cohesive team.

A.3.4 Again this model is concerned with operational effectiveness and not cohesion specifically, however, it is perceived that team cohesion is a large component of team effectiveness and therefore cohesion is measured within this model as part of the broader assessment.

A.3.5 To date the Canadians have not used the HDO to assess the impact of mixed-gender teams, due to the limited availability of data to produce a statistically robust assessment (as discussed in Section 3). However, it is felt that the HDO model is sufficiently adaptable to be used for this purpose if required. Indeed the HDO project has used the model in order to assess a variety of aspects of Canadian Forces life including impact on families, stress and well-being.

A.4 The Combat Platoon Cohesion Questionnaire (CPCQ)

A.4.1 The U.S. Army Research Institute for the Behavioural and Social Sciences (ARI) carried out ground breaking research on ascertaining the dynamics of the relation between cohesion and unit performance and on developing training tools, measures, and insights for leaders and leadership development (Siebold & Kelly, 1987) [24]. Researchers in the ARI identified three basic components of small unit cohesion, i.e. horizontal, vertical and organisational (see Section 1.5.2 above for a fuller explanation). In order to measure these components the Combat Platoon Cohesion

Questionnaire (CPCQ) was developed (Siebold & Kelly, 1987) [24]. The 73-item long form questionnaire demonstrates reasonable internal consistency and convergent validity properties, and takes about 50mins to administer.

A.5 The UK Armed Forces Team Cohesion Questionnaire (TCQ)

- A.5.1 Although the CPCQ is a well used and well validated measure, it was originally developed using an American population and designed specifically for the US Army to be applied at the platoon level. The MoD therefore commissioned work to develop a UK military standardised measure of cohesion, with the requisite properties relating to psychometric reliability and validity. In 2006, as a response to a MoD draft tasking order, QinetiQ developed a measure of team cohesiveness for use across the UK Armed Forces known as the Team Cohesion Questionnaire (TCQ) (Brown *et al.* 2006) [7]. Based on the Siebold and Kelly's (1987) [24] framework, the questionnaire scores teams against five key constructs related to team cohesion. These are: (i) team working, (ii) leader-team relations, (iii) leader competence, (iv) team member shared experience, and (v) team member pride and loyalty to the service.
- A.5.2 The questionnaire was developed using a combination of theory, Subject Matter Expert (SME) interviews and adaptation of current tools (e.g. Team Effectiveness Questionnaire, TEQ; and the CPCQ).
- A.5.3 Each individual within a team completes the questionnaire, and the scores are given at team level in order to indicate what the TCQ scores mean to the team, rather than the individual alone. The items contained within the questionnaire are scored on a 1-6 scale (1 = strongly agree, 6 = strongly disagree), and therefore a low mean score for the team represents a high level of cohesion.
- A.5.4 Although the TCQ was developed in a robust and scientific manner it does have a number of shortcomings. For instance, most of the subjects used were trainees, although the smaller work-group sample consisted of fully trained personnel who had been brought together for a training exercise. The TCQ was therefore not tested in the operational environment. A couple of the Services were under-represented in both the trainee and work-based groups, therefore questioning the tri-service utility of the measure. Methodological problems meant that it was not possible to look at TCQ scores at the team level (Brown *et al.* 2006) [7]. A further issue was raised by Collins *et al.* (2007) [4] in that during the initial interview stages participants were asked for incidents in which teams performed 'effectively' rather than 'cohesively'. Consequently, the TCQ taps into more than just team cohesion, it also addresses a number of antecedents and drivers of cohesion (e.g. team behaviour and leadership).
- A.5.5 The TCQ was further developed in 2007 by the Institute of Work Psychology, University of Sheffield. They were tasked to: investigate the psychometrics of the TCQ to assess its construct validity; and to understand how cohesion contributes to the broader issues of team effectiveness (Collins *et al.* 2007) [4]. Data were collected from 157 individuals in 30 teams, including 10 training teams from across the three Services, and 20 working teams from the Royal Navy. The gender distribution within the sample was 15% female and 85% male. Cohesion was measured by the

TCQ and three other well established cohesion measures (Beal *et al.* 2003) [3]. These were: (i) transformational leadership (9 items) and contingent reward leadership (6 items) (Brown & Dodd, 1999) [25]; (ii) team processes (Marks, Matieu, & Zaccaro, 2001) [26]; and (iii) team effectiveness (i.e. team performance (5 items) and team viability (3 items)).

A.5.6 The main findings of the study were that:

- The TCQ is measuring more than cohesion, it is also measuring team climate (cohesion, motivation, psychological safety, etc.), team processes and team leadership;
- The TCQ, as currently developed, can be used as a descriptive, diagnostic tool for team developmental purposes by team leaders and trainers;
- Team cohesion was found to be crucial for UK military team effectiveness, although it was not sufficient on its own. Team motivation and transformational leadership are also required;
- Team leaders/trainers can optimise team climate (cohesion, motivation) and in turn team performance and viability by providing strong transformational leadership, and fostering good team processes by encouraging behaviours such as mission analysis/goal setting, monitoring use of resources and affect management.

A.6 Summary

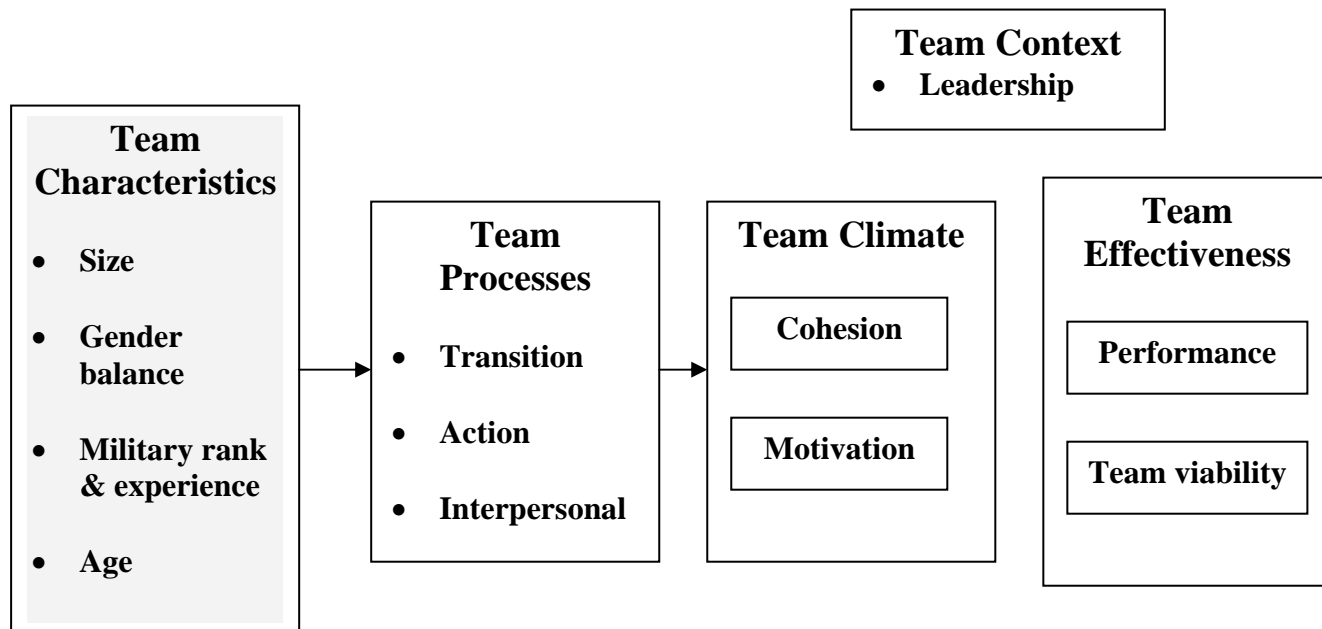
A.6.1 In summary, the tools outlined above tend to relate to the broader question of team effectiveness rather than cohesion, despite best efforts. This suggests that the measurement of team cohesion is hard to isolate and distinguish from the other characteristics of team effectiveness.

A.6.2 Good leadership, and management of the factors surrounding team cohesion appears to be very important across all the tools and is suggested as a method for creating high team cohesion and overcoming any issues that negatively affect cohesion. The measures presented above could all, with some adaptation, be used to assess the impact of mixed-gender teams on performance. Evidence presented so far has shown just how complex a construct cohesion is, and the difficulties involved in measuring it accurately and objectively. It could therefore be argued that until cohesion is better defined and standardised across the scientific community, robust data may remain as elusive as the concept itself. On a more positive note, it was found that strong leadership is essential if any form of cohesion and subsequent performance is to be achieved.

ANNEX B Components within the cohesion framework

	Social	Task
Horizontal	<ul style="list-style-type: none"> - Friendship - Mutual - Liking - Caring - Emotional closeness - Similarity - Peer bonding - Interpersonal attraction - Enjoy each other's company - Spend social time together - Trust - Group Pride 	<ul style="list-style-type: none"> - Teamwork - Coordinate efforts - Task commitment - Reliance on peers - Rule clarity - Boredom
Vertical	<ul style="list-style-type: none"> - Leader-group member caring - Leader-peer bonding - Leader share Service values - Trust in leaders 	<ul style="list-style-type: none"> - Leader communication - Leader competence
Organisational	<ul style="list-style-type: none"> - Service pride - Group size - Attainment of basic and social skills - Shared Service values - Family welfare 	<ul style="list-style-type: none"> - Job satisfaction - Share common goals - Attainment of enlistment goals

ANNEX C Team effectiveness research model



From Collins *et al.* (2007)

ANNEX D Methodology used for literature review

D.1 Approach

D.1.1 The study databases to included the PsychINFO® and Web of Knowledge databases, together with restricted access sites housed within the internal MoD information network. At the direction of the Customer searches relating to possible analogous organisations such as the Police Service, Fire and Rescue Service, the oil rig industry, etc. or the relatively recent opening up of the Armed Forces to homosexuals, were not examined for potential parallels and lessons learned.

D.2 Databases

D.2.1 Systematic searches were made from the following locations and databases:

D.2.2 Dstl desk top access

- Athena database containing the majority of the MoD's science and technology reports and records collections (and incorporating the former Defence Research Information Centre [DRIC] knowledge database) – Restricted and Unclassified. Also other NATO/European and U.S. reports, Defence Research Abstracts, U.S. Defence Research Bulletins, and Defence S&T Newsletters.
- eLibrary database containing open literature held within Web of Knowledge, and including Web of Science (with Conference Proceedings), Current Contents Connect, BIOSIS Previews, MEDLINE, and Journal Citation Reports.

D.2.3 Joint Services Command & Staff College Library, Shrivenham

- Heritage database containing all the journals, reports, etc. held within the library.

D.2.4 University of Portsmouth library

- PsycINFO® database. PsycINFO® is an electronic bibliographic database providing abstracts and citations to the scholarly literature in the psychological, social, behavioural, and health sciences. It is produced and copyrighted by the American Psychological Association. 99% of the journals in the database are peer-reviewed, dating from the early 1800s to the present, and contains nearly 3 million records.

D.3 Search terms

D.3.1 A literature search aims to scan a wide breadth of the available data in order to capture as many of the relevant references as is both feasible and manageable. As the focus of this literature review was clearly and narrowly defined by the customer to include such key words as ‘gender’, ‘teams’, ‘effectiveness’, and ‘combat’, an initial search of the databases was conducted using Boolean search operators as shown in Table 2.1 below.

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D.4 Details of literature searches

Search terms		No of hits	No of relevant items	
Wom*n	+	Combat	157	42
		Cohesion	15	5
		Effectiveness	32	17
		Performance	27	7
		Warfare	110	20
		Interoperability	0	0
Gender	+	Combat	35	112
		Cohesion	9	4
		Effectiveness	13	5
		Performance	4	2
		Warfare	27	7
		Interoperability	0	0
Female	+	Combat	30	9
		Cohesion	2	1
		Effectiveness	7	3
		Performance	6	1
		Warfare	12	3
		Interoperability	0	0
Moral	+	cohesion	6	4

E 1 Details of literature search carried out at the Shrivenham Defence Academy library

Search terms		No of hits	No of relevant items	
Wom*n	+	Combat	17,664	4
		Cohesion	115	10
		Effectiveness	15,360	8
		Performance	256	7
		Warfare	256	5
		Interoperability	120	2
Gender	+	Combat	278	4
		Cohesion	82	4
		Effectiveness	38,400	4
		Performance	39,168	5
		Warfare	230	5
		Interoperability	87	1
Female	+	Combat	33,792	3
		Cohesion	69	7
		Effectiveness	11,776	6
		Performance	512	7
		Warfare	9,472	4
		Interoperability	10	1
Moral	+	cohesion	198	3

E 2 Details of literature search carried out at Dstl

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Search terms				No of hits	No of journal articles	
Group Cohesion	+	Gender		131	101	
Group Composition	+	Gender	+	Cohesion	26	22
Military	+	Gender	+	Cohesion	98	79
				Morale	36	25
				Esprit	9	4
				Motivation	297	132
Mixed Gender	+	Performance		59	49	
		Team		32	22	
		Sport		15	14	
		Police		13	11	
Sex*	+	Police		7092	4994	
Sex*	+	Police	+	Cohesion	69	41
Homosexual	+	Police		253	189	

E 3 Details of literature search carried out at Portsmouth University

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Women in Ground Close Combat Roles: The Experiences of other Nations and a Review of the Academic Literature					
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5. Authors Paul Cawkill, Alison Rogers, Sarah Knight, & Laura Spear					
6. Originator's Name and Address			7. MOD Sponsor Name and Address		
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30 Sept 2009		66		165	
13. Abstract (A brief (approximately 150 words) factual summary of the report)					
<p>This review was undertaken in response to MoD's requirement for evidence-based data to support its consideration of UK policies regarding the employment of women in direct ground close combat roles. The report specifically focuses on identifying aspects of cohesion in mixed-gender combat teams to determine whether any objective methodologies have been developed to assess and evaluate the relationship between cohesion and effective operational performance. It involved a search of the academic literature since 2002 and personal communication with different countries regarding their policies and experiences. This review was unable to identify any empirical, scientific data examining the effects of women in close combat teams, especially within the UK Armed Forces, and it appears currently that no such information exists.</p> <p>Many countries do employ women successfully in mixed gender combat teams, the numbers are very small, and therefore, where research is feasible the small sample sizes would call into question the viability of statistically significant measurements in relation to cohesion and the impact on operational effectiveness</p>					
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