

# The subjective utility of early psychosocial interventions following combat deployment

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<b>Background</b>	Third Location Decompression (TLD) is the process through which personnel, returning from combat operations, begin to psychologically 'unwind'. Decompression comprises welfare activities, such as contacting home, beach events, social events, psycho-educational briefings and controlled re-introduction to alcohol.
<b>Aims</b>	To assess the subjective utility of decompression by surveying all British troops transiting the TLD facility in Cyprus, during 2008.
<b>Methods</b>	Analysis of distributed surveys completed by personnel who had deployed either to Iraq or Afghanistan. The main outcome was the subjective utility of the decompression process, with operational exposures, stigma, early post-traumatic stress (PTS) symptoms and adjustment concerns also measured.
<b>Results</b>	Response rate was 87% (11 304 returned surveys). Eighty per cent of respondents reported being ambivalent or not wanting to go through TLD before decompression; however, on completion, 91% reported finding it useful. The desire to participate was the strongest predictor of perceived helpfulness. Troops who found the TLD less helpful included those who had been through the process before, combat troops and non-commissioned officers. Twelve per cent reported substantial concerns about re-establishing relationships or settling down to 'normal life'; those reporting more adjustment concerns were more likely to perceive TLD as helpful. Six per cent reported significant PTS symptoms and 27% of troops reported substantial levels of stigma related to mental health and barriers to care.
<b>Conclusions</b>	TLD was well received by troops following combat deployment. However, TLD does not appear to be equally acceptable to all and alterations to the TLD programme for certain subgroups might be required.
<b>Key words</b>	Armed forces; post-traumatic stress; stigma; subjective utility; symptoms; third location decompression.

## Introduction

In the UK armed forces, decompression refers to the process where troops who have fought together collectively 'unwind' following an arduous operational deployment and begin the post-operational stress management process. Decompression is a mandatory activity and is viewed as an integral part of an operational deployment. It was put in place as unit commanders reported that the transition from operations to the peacetime setting was too sudden and that substantial numbers of personnel were not managing the adjustment well. It was therefore intended to allow a pause during which deployed personnel could experience a step down from the tempo of opera-

tions and collect their thoughts prior to disembarking at their home unit. The UK view is to conduct it in a location that is safe and distinct from both the deployment location and the home or garrison environment, hence the term 'Third Location Decompression' (TLD) [1]. Decompressing personnel are looked after by military personnel based at the dedicated decompression camp in Cyprus. Here, personnel spend 24–36h both at the beach and in the military camp but do not explore the island. Undertaking recreational activities is intended to facilitate the provision of social support and the informal sharing of operational experiences, both of which are thought to benefit mental health [2–4]. While relaxation is emphasized, personnel undertake 45 min of mandatory

psycho-educational briefings and although TLD is not a formal mental health intervention *per se*, the provision briefings are intended to benefit long-term mental health [5]. Personnel also view a short DVD highlighting the risks of driving post-deployment. Controlled access to alcohol is allowed for a limited amount of time during the evening when a barbecue meal is served prior to a comedy show. The controlled re-introduction to alcohol might be of potential benefit given the high levels of drinking reported in troops following operations [6].

Despite having good face validity, there is very little research conducted into immediate post-deployment interventions. As TLD is now a mandatory pan-military policy for formed units (as opposed to individuals deployed alone to fill certain key posts who are known as ‘individual augmentees’), it is not currently possible to conduct a randomized controlled trial, so we attempted to assess the perceived helpfulness of TLD in returning personnel and to identify whether it was perceived differentially in various military subgroups.

## Methods

Returnees from Iraq or Afghanistan completed the survey just before leaving Cyprus and after finishing TLD. The survey included basic demographic details (three items), number of previous deployments (one item), operational exposures (three items), perceived helpfulness of the components of TLD (six items), stigma and perceived barriers to care (seven items) adapted from an 18 item stigma scale used in US forces [7], concerns about re-adjustment to coming home (three items) and the Primary Care Post Traumatic Stress Disorder (PC-PTSD) Scale [8,9]. The survey took 5–10 min to complete. Two additional variables, combat arm and sex, were generated by extrapolating from an individual’s forename, service number and unit. In most cases, sex differentiation was possible as females have sex-specific service numbers. Where this was not possible, we treated this as missing data.

Responses were deemed invalid when questions were either not answered or answered in an ambiguous way (e.g. giving two responses when one was required).

Various questionnaire items were combined to produce a binary perceived helpfulness measure (helpful and a little helpful versus not helpful) and an operational exposure scale derived from positive responses to being in serious danger many times, encountering daily or multiple daily base attacks and operating in a hostile area for periods of >1 month. A binary operational exposure variable was also derived by comparing two or more positive responses to all others. A composite stigma measure was generated by combining the strongly agree and agree responses to each of seven stigma items to produce a single positive response to each item and a binary stigma variable was generated, which compared three or more positive responses with all others. A composite adjustment concern

measure was generated by scoring as positive the ‘often’ or ‘all of the time’ responses to each of the four adjustment concern items. These were thoughts about unpleasant deployment events, concerns about settling down to normal life, adjusting to relationships and settling to peacetime duties. Personnel who scored positively to three or four adjustment items were classed as having significant adjustment concerns. Previous tours were combined to produce a binary variable (1–3 and 4–6 previous tours).

Personnel were designated as having a combat role if they either reported being from the combat arms or having deployed with a combat unit. The three rank groupings used were junior personnel, a non-commissioned officer (NCO) group composed of lance corporal, corporal and senior non-commissioned officers (SNCOs) and an officer group composed of warrant officers (WOs) and commissioned officers.

Data analysis was conducted using the statistics package for social sciences (SPSS—version 15). Unadjusted and adjusted odds ratios (ORs and AORs) and 95% confidence intervals (CI) examined the association between the variables of interest. Categorical variables were examined using Pearson’s chi-square test.

This study was approved by the Ministry of Defence Research Ethics Committee (study number 0834/189 approved on 16 October 2008) and written consent was obtained from all participants.

## Results

Eleven thousand three hundred and four of 13 000 distributed questionnaires were returned (a response rate of 87%). Three civilians, 160 Royal Air Force and 68 Royal Navy personnel were not included in the analysis as their operational roles and deployment were very different to the main body of ground troops. Two hundred and thirty members of the Royal Marines (2% of the sample total) were combined with the Army personnel for the purpose analysis as their ground deployment roles are similar and this strategy preserved the homogeneity of the sample. The demographic detail of the sample is shown in Table 1.

These data suggest that the sample included a proportionately greater number of junior ranks, NCOs and WOs and a proportionally smaller number of officers than the UK armed forces overall. Females were marginally under-represented (6 versus 9% in the UK armed forces). Most had completed at least one previous deployment with 27% completing at least three. Forty-seven per cent reported that before they attended TLD, they did not wish to take part, 32% were ambivalent and 21% wanted to participate. Table 2 shows the unadjusted associations between a range of variables and perceived helpfulness.

Ratings of the psycho-educational briefings suggested that 76% of personnel felt that they might assist in dealing with unpleasant events and 70% felt that they would make

**Table 1.** Sample demographics

Characteristic	Sample, n (%)	UK armed forces (%) <sup>a</sup>
Sex (missing data 1341)		
Male	9144 (94)	91
Female	588 (6)	9
Total	9732	
Combat arm (missing data, 1891)		
Combat role	4205 (46)	
Non-combat role	4977 (54)	
Total	9182	
Rank (missing data 1315)		
Junior rank, NCO and WO	8768 (90)	83
Officer	990 (10)	17
Total	9758	
Previous tours (10 770 respondents) <sup>b</sup> (missing data 301)		
1	4340 (40)	
2	3404 (31)	
3	2145 (20)	
4	682 (6)	
5	142 (1)	
6	57 (10)	

<sup>a</sup>www.dasa.mod.uk.

<sup>b</sup>It was not possible to determine whether zero responses represented a true figure. Some may have interpreted the tour just completed as a 'previous tour'. Zero responses were therefore omitted from the analysis.

going home easier. Although differences were small, the highest helpfulness rating was given to the beach activities (95%) and social events (94%) and the lowest to the advice about post-tour driving (90%). The most frequently reported adjustment concerns were about re-establishing relationships (27%), settling down to normal life (22%) and returning to peacetime duties (17%). The lowest concerns related to thoughts of deployment-related traumatic events (12%). A range of beliefs about stigma and barriers to help seeking were examined. Not knowing where to get help was the least frequently reported item (9%), while fears of being treated differently by commanders were greatest (27%).

These data suggest that reduced perceived helpfulness was associated with having attended TLD before, having a combat role, NCO rank, not wanting to participate in TLD and lower levels of adjustment concern.

Perceived helpfulness appeared to be lowest in the 'NCO' category and highest in the 'Officer' category (OR 0.98, 95% CI 1.70–2.30). Junior rank helpfulness ratings were similar to the officer group. The lower ratings of helpfulness given by NCOs (OR 0.51, 95% CI 0.44–0.59) remained after controlling for combat arm (OR, 0.50, 95% CI 0.43–0.59), previous deployment (OR 0.51, 95% CI 0.43–0.60) and previous TLD attendance (OR 0.51, 95% CI 0.43–0.60).

Despite high levels of perceived helpfulness overall, those reluctant to participate beforehand were less likely to find TLD helpful (84% helpful) than those who were

not (99% helpful) or those with no strong feelings either way (96% helpful). Excluding ambivalent responses, the difference in perceived helpfulness ratings, between reluctant and non-reluctant participants, was highly significant (OR 13.2, 95% CI 9.2–18.8).

Although stigma did not modify perceived helpfulness, combat arm soldiers reported higher levels of stigma (30% reported three or more stigma items) than non-combat troops (24% reported three or more stigma items) (OR 1.37, 95% CI 1.24–1.50).

A model was constructed to examine the effect of multiple variables upon perceived helpfulness. The variables of interest were grouped into demographic, military and psychological blocks and entered, stepwise, into a binary logistic regression model and the results are shown in Table 3.

The association of rank and combat role with lower perceived helpfulness ratings remained following adjustment for both military and psychological factors.

Those completing fewer previous tours perceived TLD as more helpful than those who had completed more. This association persisted when psychological and demographic factors were controlled for but disappeared when demographic factors alone were entered into the model.

Lower levels of adjustment concern were associated with reduced perceived helpfulness, which persisted when demographic and military factors were controlled for. The strongest predictor of helpfulness was the desire to participate before arriving in Cyprus. These data suggest that rank, combat arm and low levels of adjustment concern are independently associated with reduced perceived helpfulness and that wanting to participate in TLD greatly increases the probability of finding TLD helpful.

## Discussion

This study found that although only 21% of UK armed forces personnel wanted to attend TLD prior to arrival, 91% found it helpful upon completion. All TLD activities were rated as helpful; however, the desire to participate prior to arrival in Cyprus appeared to influence helpfulness ratings. Twenty-seven per cent of the sample reported substantial stigma (positively endorsing three or more stigma items); this figure may well be similar to that found in non-deployed personnel and non-military groups; nevertheless, stigma remains a concern for the UK armed forces as it does elsewhere [10] and to promote stigma reduction, a variety of innovations, such as Trauma Risk Management (TRiM) [11], informative video briefings and TLD itself have been introduced. In this sample, stigma had tangible effects in that stigmatized individuals were less likely to want to participate in TLD than those reporting lower levels of stigma.

Despite around a quarter of our sample reporting substantial operational exposure, <6% reported substantial levels of post-traumatic stress (PTS) symptoms during the first day out of theatre; marginally lower than the rate

**Table 2.** TLD perceived helpfulness ratings

Variable <sup>a</sup>	TLD perceived helpfulness ratings		
	Helpful, <i>n</i> (%)	Not helpful, <i>n</i> (%)	OR (95% CI)
Number of TLDs ( <i>n</i> = 10 870) (%)			
First TLD 9410 (87)	8614 (92)	796 (9)	1.0
Second or subsequent TLD 1460 (13)	1270 (87)	190 (13)	1.6 (1.4–1.9)
Operational exposure ( <i>n</i> = 10 382) <sup>b</sup>			
One high-exposure item or less	7059 (91)	705 (9)	1.0
Two or more high-exposure items	2391 (91)	227 (9)	1.1 (0.9–1.2)
Service arm ( <i>n</i> = 9084)			
Combat arm	3791 (91)	362 (9)	0.8 (0.7–0.9)
Non-combat arm	4583 (93)	348 (7)	1.0
Rank ( <i>n</i> = 9654) <sup>c</sup>			
Juniors	3465 (94)	217 (6)	
NCOs and SNCOs	4162 (89)	496 (11)	2.0 (1.7–2.3)
WOs and Officers	1247 (95)	67 (5)	1.0
Desire to participate ( <i>n</i> = 10 874) <sup>d</sup>			
Wanted to participate	2242 (99)	32 (1)	13.2 (9.2–18.8)
Did not want to participate	4337 (84)	816 (16)	1.0
No strong feelings either way	3303 (96)	144 (4)	
Sex ( <i>n</i> = 9630)			
Male	8317 (92)	731 (8)	1.0
Female	544 (94)	38 (7)	0.8 (0.6–1.1)
Adjustment concerns ( <i>n</i> = 10 648)			
Two of four concerns or less	8476 (90)	902 (10)	1.0
Three or four concerns	1203 (95)	67 (5)	1.9 (1.5–2.5)
Stigma ( <i>n</i> = 10 898)			
Two or fewer stigmatizing beliefs	7240 (91)	712 (9)	1.0
Three or more stigmatizing beliefs	2665 (91)	281 (9)	1.1 (0.9–1.2)
R&R ( <i>n</i> = 10 774)			
Took R&R	8310 (91)	841 (9)	0.9 (0.8–1.1)
Did not take R&R	1458 (91)	135 (9)	1.0
PTSD caseness (10 531)			
Non-case	9047 (91)	913 (9)	1.0
Case	529 (93)	42 (7)	0.8 (0.6–1.1)

<sup>a</sup>The frequencies shown for the various responses differ from the sample characteristic numbers shown in Table 1 due to incorrect questionnaire completion and the exclusion of incomplete or incorrectly filled forms.

<sup>b</sup>The frequencies of experiencing the individual operational exposure items were feeling in serious danger (49%), spending greater than a month in a hostile area (47%) and experienced base attacks daily or many times a day (22%).

<sup>c</sup>For all rank groups, the difference in perceived utility was significant ( $\chi^2 = 80.796$ ,  $df = 2$ ,  $P \leq 0.001$ ) and the OR shown is the difference between the NCO and SNCO group and the Officer and WO group. The Junior Rank scores were similar to the Officers and WOs.

<sup>d</sup>Those with no strong feelings either way were not included in the analysis.

in US forces where 6% of regulars and 7% of reserve forces were 'cases' on initial screening [12,13]. While previous studies suggest that recovery is likely for many without the need for further intervention [14], some will inevitably go on to develop mental health problems. The mental health briefings attempt to signpost those with enduring symptoms to appropriate sources of help; however, those most in need may be stigmatized and therefore the least likely to seek out help. Reassuringly, the psychological briefings were viewed as helpful by all personnel irrespective of PTS status.

We suggest that commanders at all levels promote engagement in TLD by encouraging personnel to view it as an important repatriation activity. To further reinforce this notion, a video briefing for families describing

TLD has been developed. We do, however, advise that operational commanders consider the possible adverse effects of mandating TLD for all as those with low levels of adjustment concern and operational exposure may become frustrated. Operational planners are currently prepared to allow returning units to bypass the TLD facility so long as arrangements are in place to deliver the key briefing and welfare elements of TLD once the unit or individual reaches the homeland.

The results of this study further support the finding that deployment should not necessarily have a negative impact on the mental health of women [14] and we found no evidence that those surveyed saw TLD as being less helpful than men even in the male-dominated TLD environment.

**Table 3.** Unadjusted and adjusted demographic, military and psychological variables

Variables	Unadjusted and adjusted analyses, OR (95% CI)			
Demographic block	Unadjusted	Adjusted for military	Adjusted for psychological	Adjusted for psychological and military
SNCO and others	<b>0.41</b> (0.43–0.59)	<b>0.50</b> (0.42–0.59)	<b>0.59</b> (0.49–0.71)	<b>0.51</b> (0.49–0.72)
Combat arm and others	<b>0.77</b> (0.66–0.89)	<b>0.76</b> (0.64–0.89)	<b>0.81</b> (0.68–0.96)	<b>0.82</b> (0.68–0.98)
Military block	Adjusted for demographic	Unadjusted	Adjusted for psychological	Adjusted for demographic and psychological
Operational exposure	0.88 (0.73–1.06)	0.92 (0.78–1.08)	0.96 (0.80–1.15)	0.99 (0.80–1.23)
Previous tours	1.21 (0.93–1.58)	<b>1.53</b> (1.23–1.90)	<b>1.49</b> (1.17–1.91)	<b>1.42</b> (1.06–1.91)
Took R&R	1.02 (0.80–1.28)	0.92 (0.75–1.12)	0.95 (0.76–1.19)	1.01 (0.77–1.32)
Psychological block	Adjusted for demographic	Adjusted for military	Unadjusted	Adjusted for demographic and military
Stigma	0.88 (0.71–1.07)	0.95 (0.78–1.11)	0.94 (0.79–1.12)	0.87 (0.70–1.07)
Adjustment concerns	<b>0.53</b> (0.37–0.76)	<b>0.52</b> (0.38–0.72)	<b>0.51</b> (0.38–0.70)	<b>0.54</b> (0.38–0.79)
PTS caseness	0.74 (0.46–1.19)	0.89 (0.60–1.32)	1.05 (0.73–1.50)	0.68 (0.41–1.12)
Wanted to participate	<b>15.94</b> (9.79–25.94)	<b>13.81</b> (9.30–20.51)	<b>13.71</b> (9.36–20.07)	<b>17.08</b> (10.18–28.66)

Significant results are shown in bold.

Those undertaking a second or subsequent TLD appeared to find the process substantially less helpful. This was not related to frequent deployment but might be related to repetition and lack of novelty. How best to accommodate the needs of serial attendees given current operational tempo is an issue for the future.

The finding that perceived helpfulness is related to reporting more adjustment concerns suggests that TLD should not be a 'one size fits all' process. In personnel who deploy to low intensity operational areas, TLD may be less of a requirement and if used for fewer personnel, then more resources might be freed up for planners to run TLD in novel ways.

We also found that junior commissioned officers and SNCOs found TLD less helpful than other ranks, which may be related to their command function of supervising subordinates, which does not stop during TLD. Importantly, this finding was not related to previous deployment or TLD attendance. Again, targeted measures may be needed to ensure full engagement with TLD in this group.

Taking a rest and relaxation (R&R) break was reported to be helpful by the vast majority of troops surveyed and it did not affect the perceived helpfulness of TLD for those who took it. Given the competing military views regarding the utility, manpower implications and mechanics of R&R, this finding may have implications for future operational planning.

While high levels of perceived helpfulness for TLD are gratifying, we accept that this may not be related to better post-operational adjustment [15]. We will seek to examine this in the future by conducting a longitudinal follow-up of decompression using a mixed qualitative and quantitative approach to assess the progression of psychological injury post-deployment.

Strengths of this study include the large sample of military personnel completing the survey and the high response

rate, which limits the likelihood of important subgroups of personnel being under-represented. However, the survey tool was necessarily brief and did not assess some important demographic variables known to influence mental health outcomes, such as service length, relationship status and age. Some important variables were generated but it was not possible to control for a number of important variables in the final analyses. In addition, we recognize that the excitement about the prospect of coming home may have played a part in the high utility ratings and also that satisfaction surveys can be problematic and subject to bias arising from prevailing affective and cognitive states [16,17]; however, we have attempted to offset this by asking for detailed ratings of individual TLD items, garnering feedback by way of a free text response and also assessing the desire to participate in TLD prior to arrival in Cyprus.

Since the troops who used the TLD facility were in the main from the British Army, and also the Royal Marines, it is difficult to ascertain how much the results would generalize to other services. One size may not fit all and certain subgroups of personnel who were not well represented, such as individual augmentees and senior officers may require a different approach.

TLD appears to be well received in its current form. However, the data presented here suggest that most were sceptical beforehand but reported satisfaction afterwards. Problems remain and it is also notable that the least satisfied were the combat troops who perhaps are the principal target of decompression. NCOs, SNCOs and those with few adjustment concerns are among those least likely to see TLD as being helpful. It seems that satisfaction can rapidly diminish if TLD becomes burdensome, particularly if units perceive that their return home is being impeded. TLD must form part of a natural homecoming process and be seen as an integral part of deployment. An investigation should be undertaken into how to modify

the TLD process to both identify who it is best suited for and to further improve its potential benefit. Research should be undertaken to establish whether TLD does indeed reduce the incidence of psychological injury.

### Key points

- Formalized psychological ‘unwinding’ is well received by troops following arduous combat deployment.
- Third Location Decompression is not equally acceptable to all and may require adaptation for certain groups including middle rank commanders, those with few concerns about homecoming and combat troops.
- The most important predictor of perceived utility is the desire to take part and vigorous preparation by commanders before attendance should help with this.

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### Conflicts of interest

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