



Public Health
England

Protecting and improving the nation's health

Healthier weight: Defence insights to tackling a national challenge

The Defence Occupational Fitness ('DOfit') Programme



Ministry
of Defence



DOfit
Defence Occupational
Fitness Programme

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Foreword

Public Health England (PHE) and the Ministry of Defence (MOD) have a shared mission to ‘...protect and improve health’ of the nation and the UK Armed Forces, respectively. This includes creating the environments for health promoting behaviour to support people to maintain or achieve a healthier weight. In the MOD we must also meet the commitment of the Armed Forces Covenant for Service personnel – ensuring no disadvantage within wider society, either during their time in service or in their lives beyond the military. As custodians of our people’s health, the MOD and PHE have a common aim to prevent and redress overweight and obesity by developing, promoting and facilitating healthier behaviours.

Achieving and maintaining a healthier weight is a complex issue, where the causes of obesity surround us in our homes, our workplaces, and in our places of recreation and leisure. But the challenge is far greater than the impact of the environment in which we reside; obesity is also driven by societal, biological and behavioural factors, which interact with our environment. These drivers affect people differently, and people living in more deprived areas are disproportionately affected.

By recruiting many of its personnel from deprived areas, the Armed Forces provide opportunities to address health inequalities and improve the quality of life prospects for its personnel. The Armed Forces also provides a unique opportunity to explore the complex issues driving the nation’s obesity crisis, and in so doing to share this learning to inform effective solutions more broadly.

The MOD’s Institute of Naval Medicine has worked with Diet, Obesity and Physical Activity team colleagues at PHE since 2013. Specifically, through this collaboration, PHE has supported the MOD to: develop evidence-based Military Dietary Reference Values (MDRV) for Energy to inform a risk assessment of nutrition provision – working with the government’s Scientific Advisory Committee on Nutrition (SACN); develop evidence-based Armed Forces Food Based Standards to drive healthy food provision; and, more recently, inform the Defence Occupational Fitness Programme.

This report presents learning from the implementation of the Defence Occupational Fitness Programme, where the MOD has adapted and applied national guidelines and evidence on effective weight management programmes to our military community. The implementation has provided valuable learning on the challenges and barriers to the effective delivery of such approaches, but also potential facilitators and solutions.

The report has purposefully highlighted those areas of the programme that need to be improved to deliver an effective solution to Defence. This learning, albeit in a military context, shares similarities with the findings in more public facing weight management

programmes. As such, this report presents important evidence to share with all those involved in improving the health of people living with overweight or obesity.



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Abbreviations

AFWM	Armed Forces Weight Management
ANOVA	Analysis of Variance
BMI	Body Mass Index
DHWA	Defence Health and Wellbeing Adviser
DOfit	Defence Occupational Fitness Programme
ERI	Exercise Rehabilitation Instructor
GCSE	General Certificate of Secondary Education
INM	Institute of Naval Medicine
IQR	Inter-Quartile Range
KPI	Key Performance Indicator
LPTI	Leading Hand Physical Training Instructor (Royal Navy)
MDP	Ministry of Defence Police
MDT	Multi-Disciplinary Team
MO	Medical Officer
MOD	Ministry of Defence
MSKI	Musculoskeletal Injury
NHS	National Health Service
NICE	National Institute of Health and Care Excellence
PHE	Public Health England
PT	Physical Training
PT-2	Physical Training (Instructor)-2 (Royal Marines)
PTI	Physical Training Instructor
QoL	Quality of Life
RAF	Royal Air Force
RAPTCI	Royal Army Physical Training Corps Instructor
RM	Royal Marines
RN	Royal Navy
SD	Standard Deviation
SP	Service Personnel
UHC	Unit Health Committee
UK	United Kingdom
US	United States
WM	Weight Management
WSA	Whole Systems Approach

Executive summary

Excess body weight in the Armed Forces impairs physical fitness and increases musculoskeletal injury (MSKI) risk, negatively affecting productivity and self-reported ability to work. Obesity also adversely impacts upon wellbeing and mental health.

Defenceⁱ worked collaboratively with PHE to develop and pilot an occupational fitness programme to support military service personnel (SP) in passing their mandatory annual fitness test, through supporting positive health behaviours to tackle overweight and obesity. This report provides insight into how a workplace behaviour change programme was developed at minimal cost, and to share learning with other organisations who face barriers to promoting a healthier workforce. In addition to providing the results from the pilot study evaluation, information is included regarding how the programme has evolved, as well as how challenges encountered during the pilot study are being addressed.

The Defence Occupational Fitness programme (referred to hereafter as the DOfit) was implemented as a quality improvement programme with the primary aim of improving the fitness of UK SP. The activities of the 12-month person-centred, healthy lifestyle intervention were planned relative to the Behaviour Change Wheel framework incorporating the COM-B model. The main health outcome measures included fitness, waist circumference and weight loss. The Defence Health and Wellbeing Adviser (DHWA) training was specifically introduced and developed to equip health and healthcare practitioners with the knowledge and skills to deliver the DOfit programme, and to support SP adapt their behaviours to be healthier. These DHWA-trained practitioners provided structured DOfit educational sessions, working both one-to-one with SP and in group settings.

The DOfit programme was initially implemented in fourteen military units across Defence, each as a separate DOfit course. These DOfit courses followed the same standardised timetable, however, the sessions were tailored to meet the specific needs of each unit (ie person-centred, location-relevant). Courses were evaluated at 12-weeks, with follow-up at 12-months. A total of 156 SP across all courses started on the DOfit programme, with 115 available for measurements at week-12, and 51 SP available for a 12-month follow-up. The DOfit programme was associated with 9.2%

ⁱ The MoD, hereafter referred to as 'Defence', and is the UK government Department responsible for implementing Defence policy, as set by Her Majesty's Government. The Department is staffed by civil servants and (uniformed) SP of the British Armed Forces, which comprise the: Royal Navy (including the Royal Marines and Royal Fleet Auxiliary); British Army; Royal Air Force; and Strategic Command.

(21.7 W) increase in fitness, 3.5% (-3.9 cm) decrease in waist circumference and 2.4% (-2.9 kg) decrease in body weight at 12-months.

Whilst 33% of participants measured at 12-months recorded a weight loss of over 3%, and 11% of participants recorded a weight loss of over 5%, the range was from -36 kg to +9 kg across the 14 DOfit courses. Despite a similar approach taken for each of the DOfit courses, some courses were more successful and had better outcomes than others.

Thus, whilst each course was generally successful in increasing occupational fitness (on average for the cohort), not all DOfit courses were successful in supporting SP achieve their behaviour change weight loss (on average for the cohort) goals. Understanding the reasons for different outcomes provides important learning to share with other organisations that are supporting the health and wellbeing of a multi-centred, geographically dispersed workforce.

Learning based on the quantitative and qualitative data captured from the DOfit programme indicated that effective DOfit courses had the following characteristics:

- are evidence-based and adopt a whole-system, multi-component approach
- are flexible to accommodate the specific setting (ie context-relevant) and tailored to the needs of the target audience (ie person-centred)
- are supported by the leadership/management of the military unit/organisation
- are coordinated in situ by an enthusiastic and appropriately (DHWA) trained 'change agent' facilitator, preferably with multidisciplinary team support
- are embedded in a supportive health environment that promotes healthier options
- involve engaged participants who worked collaboratively as a course cohort (i.e. social support)
- established good communication methods to maintain two-way practitioner-participant and participant-participant contact
- communicate the planned approach to programme participants and the wider organisation, specifically with respect to regular follow-up sessions
- implement robust measurement, data recording, feedback and outcomes reporting processes that inform organisation-wide governance and assurance procedures
- apply data-informed adaptive learning principles to customise support in situ

However, it should be noted that the lack of a control arm in this quality improvement service delivery pilot study does not allow the effect of the intervention per se to be determined in this context. Moreover, logistical issues within a complex work environment impacted upon planned follow-up and data reporting, such that measured programme adherence was poor. Thus, mean sample data from the outcome evaluation element of the pilot study should be treated with caution. Nevertheless,

comparable levels of adherence and health improvement benefits were achieved relative to other similar – but significantly better resourced – programmes.

In conclusion, this pilot initiative undertaken in an occupational setting trained a public health workforce (DHWA) to deliver a health behaviour change intervention (DOfit) in a workforce located in multiple centres. Further work to improve service quality and data management is ongoing. This includes developing a formalised governance and assurance structure to support programme delivery, and a participant-practitioner online digital tool to assist outcome data recording.

Purpose of this report

This report presents the outcomes and learning from the development and evaluation of a UK Defence-led occupational fitness, health and wellbeing quality improvement programme. Developed and implemented together, within the context of Defence as the system, the programme comprised the DHWA (public health workforce) training and the DOfit (health behaviour change) programme.

Learning from this work in Defence is transferable to other contexts and provides evidence on the opportunities to help improve approaches to supporting employees with healthier behaviours and weight management. It is therefore relevant to: Defence health and healthcare audiences; national policy makers in health and Defence; local government public health teams; NHS organisations; and academics.

Report structure

Key learning is presented in four sections:

- **Section-1.** Development of the DHWA training, including fidelity, reach and adoption
- **Section-2.** Development and outcome evaluation of the DOfit programme
- **Section-3.** DHWA training and DOfit programmes within the Defence system, including process evaluation
- **Section-4.** Defence insights to inform tackling overweight/obesity in the wider UK context

The report closes by detailing how the learning captured from this initiative is being translated into the Next Steps in Defence.

Throughout the report reference is made to a separate Annexe, which contains a series of sections. These sections contain detailed technical information relating to the programme implementation and evaluation outcomes.

Introduction/background

Causes and risk factors of obesity

The prevalence of overweight and obesity is increasing in the adult UK population (1, 2), which is consistent with global trends (3). Physical inactivity, overweight and obesity pose major public health concerns, and are associated with an increase in the number of people living with one or more chronic non-communicable diseases, more of the population suffering from depression, negative mood states and poorer mental health (4, 5), a reduction in quality of life (QoL) and higher mortality rates (6, 7, 8, 9). The way in which individuals and communities are affected varies, and it is the responsibility of national and local government, the NHS and broader health and social care system to actively promote healthier behaviours and assist in shaping environments to mitigate these risk factors.

Living with obesity can have a profound impact on individuals and presents implications for the workforce, organisations and wider economy. UK societal trends of unhealthy behaviours, which contribute to overweight and obesity (4, 10), are mirrored in the UK Armed Forces (11, 12, 13, 14). Defence recruits a significant proportion of its workforce from the UK population, which raises issues for Defence in how it provides and cares for SP in mitigating poor health risks and in maintaining a level of physical fitness to undertake their occupational roles. Defence can therefore learn from weight management interventions delivered at a population-level, and apply this learning into its own unique environment. Conversely, there is learning for organisations outside of Defence on how approaches have been implemented in the military, and how this information can be captured and translated to other areas of the workforce.

The drivers and determinants of obesity are complex and multifaceted (15). At an individual level, unhealthy diets and physical inactivity are major contributing factors to obesity (16, 17). These are influenced by a broader set of drivers, including: an individual's physiology; environment factors; psychological; and societal influences (15). Thus, to address obesity, a socio-ecological approach is required to improve the environment that facilitates and supports healthier food and activity options (15, 18).

Overweight and obesity in the Armed Forces: Risk to health and duties

At an organisational level, 27% of SP in Defence live with overweight or obesity (19). Living above a healthy weight and gaining excess body fat in the military can impair physical (20) and mental fitness; impact upon productivity (21); reduce self-reported

ability to work (22); increase the likelihood of SP becoming 'unfit for duty' (23, 24); increase heat illness risk (25); and directly impact upon the ability to deploy (26). These weight-related risks increase with age (12, 19), and the relative risk of being 'unfit to deploy' increases with increasing body mass index (BMI) and health-risk classification, as identified by the National Institute for Clinical Excellence (NICE) (27).

The odds of sustaining a MSKI injury are 15% higher in individuals living with excess weight (28) and increase incrementally with an increase in BMI health-risk classification (29). Musculoskeletal disorders and injuries affect 1 in 4 SP, with 1 in 10 being medically downgraded, accounting for 53% of Armed Force personnel being medically discharged between April 2013 and March 2018 (30). Recovering and rehabilitating SP with MSKI will cost the Army an estimated £1.2 billion between 2016-2031 (31). However, this estimate does not include medical diagnoses, treatment/care costs and medical-legal claims. As such, this is a conservative estimate, where the total cost of MSKI to Defence is an unknown financial liability. Moreover, the proportion of SP being medically downgraded or discharged from the Armed Forces due to MSKI has been concerningly consistent over the last 10 years (30, 32, 33).

Supporting healthier weight for SP is important in mitigating injury and illness as part of the MOD's duty of care. Moreover, failure to directly address overweight and obesity could impact upon the retention of SP, and specifically the loss of trained, highly valued military expertise (34). Defence approaches to addressing the health challenges associated with MSKI and excess weight have, up until recently, focused upon the symptoms not the cause, where a significant proportion of associated health outcomes are preventable (35, 36). The NHS spends an estimated £6.1 billion each year on overweight and obesity-related ill-health (37), where obesity is a modifiable factor that could be ameliorated through improving health behaviours (38). Unhealthy diets, physical inactivity or regular alcohol consumption can contribute to weight gain in SP (39).

Armed Forces Weight Management policy

The Armed Forces Weight Management (AFWM) policy (40) is part of an overarching Defence Health and Wellbeing Strategy (41), which aims to ensure that SP have a level of physical fitness and health to be appropriately prepared to perform their role (40). The policy details the responsibilities of the Army, Royal Air Force (RAF) and Royal Navy (RN), and the roles of Physical Training Instructors (PTIs) and medical professionals, to support the prevention and treatment of overweight in SP. The policy refers to the (NICE) health risk categories (27), and advises regular assessment to prevent overweight and enable early intervention where appropriate.

Whilst the AFWM policy and a Defence medical policy (42) are in place to identify and support SP living with excess weight, implementation has been incomplete and/or inconsistent (19). One outcome of this could be an increase in demand on Defence medical services to treat the ensuing health conditions. Excess body weight can adversely impact on MSKI rehabilitation and increase the risk of re-injury (43).

Context to the development of the DOfit programme

The Institute of Naval Medicine was tasked by the Director of Personnel Services (Army) in August 2014 to develop an evidence-based, person-centred, NICE guidance compliant (27), health behaviour change weight management programme to meet the needs of SP.

Working collaboratively with the Obesity and Healthy Weight Team in PHE, the DOfit working group planned to: develop and deliver a public health workforce training programme, to appropriately equip 'change agents' (DHWAs) to deliver an evidence-based, person-centred, health behaviour change weight management programme (the "DOfit programme"); and, promote Defence organisational change to better support SP who continued to fail their mandatory service fitness test, where living with overweight or obesity was a contributory factor. The DHWAs provide support and guidance to SP on a range of topics delivered through educational sessions, working one-to-one and in groups with SP. In the Annexe to this publication, section 1 provides the Conceptual Framework for the DOfit programme.

The DOfit programme was evolved from a health behaviour change intervention implemented in a military environment, which was formally evaluated as part of Second Sea Lord's Feeding the Fleet Initiative (44, 45). This work supported adoption of a socio-ecological approach, involving multi-level and multi-component strategies (46, 47). Specifically, the intervention considered environmental strategies that focused on reducing barriers to accessing healthier food options, restricting the availability of foods and drinks high in fat, salt and sugar, and increasing cues to healthier (diet and physical activity) behaviours (48). Thus, the DOfit programme was consistent with adopting a whole systems approach (49).

Whilst the DOfit was specifically developed for a military environment, the approach had to also take into consideration the 'free living' context of SP. DOfit programme participants could be resident in 'mess' accommodation located within military establishments/units, and therefore influenced by the military feeding and physical activity environment. However, participants might also live within the wider community. As such, SP will also encounter an environment that encourages foods high in energy and/or large portion sizes, and physical activity cues and defaults to which many people in society are exposed.

Section-1: DHWA training development, fidelity, reach and adoption

Introduction

The first element of the DOfit programme was the development of a public health workforce training schedule. Prior to the DOfit initiative, SP at risk of weight-related ill-health were directed to the military unit medical centre and/or the PTI in the gym for generic diet and physical activity advice, where staff were limited in time and specialist skills to provide best practice weight management support (50).

A DOfit working group was set up to guide the development and implementation of this quality improvement programme. This was to ensure that any action taken was joined up and coordinated between different Defence agencies. Due to the delivery of separate DOfit courses in each of 14 military units across the organisation, each led by a DHWA-trained deliverer, programme coordination was particularly important. For the pilot study, the DOfit course deliverers were PTIs and Exercise Rehabilitation Instructors. However, as the programme evolved beyond the pilot study, Defence medical service practitioners, military caterers (chefs) and executive officers also received DHWA training. Training a workforce to support a multidisciplinary team approach contributed to the increased reach of the DOfit programme to a wider SP community. However, organisational change was also facilitated and promoted through greater understanding of the required approach to support health behaviour change, as well as increased awareness of the programme and its aims.

The plan for the DOfit programme was to deliver public health workforce training to PTIs and Exercise Rehabilitation Instructors at scale, who would then support SP attending DOfit courses. The DHWA training competency up-skills PTI (and more recently Defence primary healthcare staff) to operate in the health and wellbeing domain, promoting physical fitness, health and wellbeing, supporting the readiness and resilience of SP. The DHWA training needed to align with the Defence weight management policy requirements (40), which are detailed in [Table 1](#).

Table 1: DHWA training syllabus assessed against Defence weight management training requirements (40)

	Defence weight management training requirement	DHWA training inclusion
1	Undertake height, weight and waist circumference measurements to assess SP health risk	Yes
2	Be aware of the complex needs of SP and issues affecting health and wellbeing	Yes
3	Deliver support using evidence-based behaviour change techniques supporting SP to improve their health and physical fitness outcomes	Yes
4	Support SP to set realistic target weight loss goals over a 12-month period (including, 5-10% of initial body weight), with a safe weekly loss of 0.5-1.0 kg (1-2 lb), and the knowledge and skills to develop an individualised action plan to achieve the required behaviour changes	Yes
5	Provide support to SP to change behaviours with respect to meal and drink consumption (including alcohol), energy and nutrient intakes, portion size and pattern and timing of eating. Approaches to changing dietary habits should follow UK government healthy eating guidelines and the Scientific Advisory Committee on Nutrition (SACN) statement on military dietary reference values for energy	Yes
6	Promote increased physical activity (including formal physical training/sport, active hobbies, and increased physical activity in daily living), to support achievement of mandated occupational fitness standards, as well as health and wellbeing, and reduced physical inactivity/sedentary time	Yes
7	Support the maintenance of a specific target weight (for example, -1.5 kg or -3 lb), and the continuation of habitual healthier lifestyle behaviours (eating, physical activity and alcohol consumption), through the provision of ongoing, formalised, structured support	Yes

	Defence weight management training requirement	DHWA training inclusion
8	Address stigma in relation to a SPs weight such as through bullying, teasing, banter/harsh comments, discrimination or prejudice based on a SPs body shape or size. The Chain of Command and Unit Health Committee should work to establish a supportive health and wellbeing culture at a unit level, with Senior Command setting this agenda for each single service	Yes

DHWA training development

Due to their professional training, Defence physical development staff (PTI and Exercise Rehabilitation Instructors) were considered to already possess the knowledge and skills to promote and support an increase in physical activity levels in mixed ability groups. The emphasis of the DHWA knowledge and skills training syllabus was therefore developed to specifically support person-centred health behaviour change, and to provide evidence-based standardised nutrition education.

Whilst the emphasis of the training is on weight management, the knowledge, skills and competencies learnt by the DHWAs in encouraging behaviour change, can be applied to other aspects of health-related behaviour for SP and their families. Details of the DHWA taught elements (section 2), and course outline (section 3) can be seen in the Annexe.

The first DHWA training course was delivered in January 2016, where the approach was a combination of classroom-based learning and workplace practice. The original delivery model was an initial 3-day ‘introduction’ teaching block, followed by a 2-day ‘consolidation’ teaching block, separated by a 6-week ‘practice and reflection’ period. The course content was well received by the students, however, the two-stage delivery mode proved logistically challenging for the organisation, in terms of the students securing time away from their unit to attend and resourcing the delivery of the training.

A 3-day DHWA delivery model was therefore trialled in October 2016. Student and course delivery staff views confirmed that this was the most effective and efficient approach to training delivery. The revised 3-day DHWA training course was rolled out

from January 2017, and a few months later the course was certificated by the Association for Nutrition as a level-4ⁱⁱ nutrition course (March 2017) (51).

From September 2017, the DHWA training was also delivered to Defence primary healthcare practitioners to extend weight management support for SP across Defence and to develop multidisciplinary teams. This was felt to be of benefit to SP, providing a 'safe space' to discuss their health and wellbeing, access additional multidisciplinary team support as required and be signposted to other relevant services. The DHWA training has been submitted to the Defence Awards Organisation to secure a level-4 qualification and is currently undergoing formal review to ensure that it is compliant with the Defence Systems Approach to Training (52). Each year, a review of the DHWA programme occurs, with a more indepth consideration at triennial reviews.

Fidelity, reach and adoption of the DHWA training

Fidelity

Training fidelity refers to the extent to which skills and attitudes acquired during a training programme are transferred to the work and/or practice environment. DOfit participant focus groups and case studies, as well as leader interviews, provided evidence to assess the DHWA training fidelity (refer to Annexe, sections 9-11).

In their usual work environment, the trained DHWAs encouraged SP to be engaged with the DOfit programme through their demonstrated knowledge on health behaviours and their delivery approach. Healthy competition in physical activity and weight loss was encouraged within each unit and welcomed by participants. The DHWAs' ability to breakdown (military) rank barriers within the programme was viewed as important.

In terms of the DHWAs' attitudes, DOfit participants appreciated their non-judgemental, supporting and encouraging approach. The ways in which a DHWA engaged with participants was considered fundamental to the success of a DOfit course. DHWA characteristics that were deemed positive by DOfit participants included being: approachable; enthusiastic; passionate about the programme; willing to get involved; and open to sharing their own experiences.

ii Association for Nutrition, fitness and leisure framework (reference CC0049)

Reach and adoption

DHWA reach and adoption were assessed from inclusion of the DHWA training package (including learning outcomes) in formal trade training programmes (for example, PTI, healthcare practitioner) across Defence.

In May 2019, Defence Medical Services formally endorsed the recommendations of the Defence Rehabilitation Quality Improvement Programme report (54). These recommendations included the adoption of the DHWA as discretionary training for healthcare practitioners. From July 2020, the DHWA training was delivered to Ministry of Defence Police fitness instructors as part of a Force-wide health, wellbeing and fitness initiative.

As of July 2020, a number of DHWA training programmes had been delivered across Defence. At the time of the 12-month evaluation of the pilot study, n=421 PTIs, health professionals and other staff holding different roles had attended DHWA training (53). Completion of training increased to n=608 DHWAs by July 2020, with training delivery ongoing. The distribution of DHWAs by Service is presented in [Table 2](#).

Table 2: DHWA trained PTIs and health professionals by Service January 2016- July 2020

Military Service	DHWA trained n (%)
Army	321 (53)
Royal Navy	158 (26)
Royal Air Force	72 (12)
Royal Marines	23 (4)
Other, including civilians	34 (5)
Total	608

At the time of reporting, DHWA training had extended across all three Services (RN, Army, RAF), as well as civilian (health and healthcare) practitioners. Moreover, DHWA training had been adopted as mandatory training for PTI, and discretionary training for military and civilian PTIs, Military Defence Police, Fitness Instructors and Defence primary healthcare practitioners (Table 3).

Table 3: DHWA training adoption

Adopter/Programme	Date
Royal Marines PTI-2 (a)	Aug 2017
(Pilot) Defence Primary Healthcare practitioners	Sept 2017
RN Leading Hands PTI (a)	Oct 2017
(Pilot) Defence Rehabilitation healthcare practitioners	Jan 2018
Royal Army Physical Training Corps Instructor (a)	Nov 2018
(Pilot) Royal Air Force PTI	April 2019
Defence Primary Healthcare & Defence Rehabilitation healthcare practitioners	May 2019
Royal Air Force. PTI additional qualification	Feb 2020
Field Army Optimising Human Performance programme (b)	June 2020
Ministry of Defence Police. Fitness Instructor Training (c)	July 2020

- Notes: (a) Integrated into single Service PTI role training qualification.
 (b) Adopted by the Field Army to support soldier health and ability to deploy.
 (c) Integrated into the Military Defence Policy to support a Force-wide occupational fitness-orientated health and wellbeing intervention.

Section-2: DOfit development and outcome evaluation

Introduction

This section presents the quantitative outcome evaluation of the pilot study, which comprised the first 14 DOfit courses initiated (between April 2016 and June 2017) in Defence, and an assessment of DOfit course delivery relative to PHE's KPIs for tier-2 weight management services. The evaluation approach followed the PHE Standard Evaluation Framework (55); the main findings are presented to inform the learning captured from this programme.

As previously discussed, the DOfit programme syllabus and approach had previously been trialled and evaluated as part of Second Sea Lord's Feeding the Fleet Initiative (44, 45). Shaw et al. (44, 45) developed a military environment-specific health behaviour change intervention, which was compliant with PHE behaviour change guidance (56). DOfit intervention activities were based on the Behaviour Change Wheel framework (57); a systematic, theory-driven approach was adopted that incorporated the COM-B model (capability, opportunity, motivation and behaviour). The model recognises that to change a target behaviour, an individual needs the capability to change, the opportunity for the behaviour to occur in terms of a physically and socially conducive environment, and to have a sufficiently strong motivation to change. The DOfit programme therefore incorporated a range of behaviour change techniques to meet programme aims and objectives (for example, goal setting, problem solving, action planning, self-monitoring, feedback on behaviour and social support), whilst also being cognisant of the military setting, the barriers and facilitators of the environment, and the challenges and opportunities of military occupational roles.

The DOfit programme is a live Defence service, and by June 2019 (the time of the 12-month evaluation report) 57 DOfit courses (Army, 44; RN, 12; RAF, 1) had been initiated involving circa 675 participants. A further 17 courses have been initiated since June 2019, providing health behaviour change support to over 700 SP. Course cohorts range from 6 to 16 participants, depending upon Chain of Command and unit support.

The primary aim of the DOfit programme is to increase the ability of SP to deploy by:

- increasing the number of SP attaining their mandatory annual service occupational fitness test
- reducing the numbers of SP at risk of weight-related injury and illness, and in particular MSKI

The planned DOfit programme therefore provided evidence-based, multi-disciplinary, person-centred education and behavioural change support to SP to promote and encourage healthier choices. The programme also raised awareness of the impact of health behaviours through improving knowledge of the influence of diet, nutrition and physical activity on health outcomes.

The standard planned model for the DOfit programme consists of:

- an initial 5-day course (in week-1 of the programme) that specifically focused upon behaviour change techniques to improve participants' food choice, physical activity levels, sedentary behaviours, and alcohol intake (refer to the Annexe, section 4)
- this was followed by weekly height, weight and waist circumference measurements and DHWA-delivered health behaviour change support consultations through to week-12
- from the 12-week measurement point, DOfit participants were supported by monthly measurement/reviews up to 12 months, with the aim of supporting long-term health behaviour change
- supplementary education sessions provided further information on nutrition, physical activity and alcohol, delivered at 3-, 6- and 9-months to support any weight loss maintenance

Since the delivery of the pilot, the DOfit programme is continuing to the planned model as set out above.

DOfit outcome evaluation methods

The Ministry of Defence Research and Ethics Committee approved a protocol describing the quantitative and qualitative evaluation of the DOfitⁱⁱⁱ. This was a within-subject, repeated measures design, assessing the implementation of an intervention approach that had previously been evaluated in the experimental study (44, 45). As such, a single-arm intervention (no control) was delivered. The study was conducted in accordance with the ethical standards of the Declaration of Helsinki (58).

Each DOfit course was delivered at a different unit by a different DHWA delivery team. The outcome evaluation cohort (combined from all participants who attended a DOfit course) was determined by the requirement to secure $n \geq 120$ DOfit participants

ⁱⁱⁱ Reference: 693/MODREC/15

attending the programme (59). This sample size was derived from a UK military healthy lifestyle workplace intervention data set (44, 45); to detect a clinically significant weight loss effect size of 5-10% weight loss in SP between the start of the programme and at 12-weeks and at 12-months follow-up. A sample size of between n=60 and n=206 would be required based on a power of 0.95 and an alpha value of 0.05. It was acknowledged at the outset that, due to fitness *per se* being the primary outcome objective, the effect size for fitness would be greater than for weight loss. However, relevant fitness data were not available in the target population to inform the sample size calculations a priori.

Potential participants could self-refer to the DOfit programme, or a referral could be made by a PTI at the point of a mandatory service fitness test failure, or by a health practitioner following attendance at a medical centre or primary care rehabilitation facility, identifying SP who may benefit from course attendance. There was no minimum (health, physical fitness) entry standards to the DOfit programme. However, participants were required to be able to walk and/or cycle, use basic gym equipment, and undertake strengthening, conditioning and stretching activities safely (within their limitations). Potential DOfit participants were assessed for Readiness to Change at week-1 (60) and if deemed 'ready' were invited onto the programme.

DOfit participants were advised of the evaluation study in advance of attending the programme and received a specific study brief prior to providing consent. During week-1, height, weight and waist circumference measurements (40) and individual BMI health risk classifications were determined (27, 61), physical fitness was assessed (62), and DOfit participants completed smoking and alcohol histories (63); general nutrition knowledge (64); QoL (65), and self-esteem questionnaires (66). Follow-up measurements were undertaken by the DHWAs at week-12 and 12-months as detailed in [Table 4](#).

Table 4: Timelines for outcome evaluation measures

Measures	Time point					
	Pre-course	Week-1	Week-12 (3 months)	6 months	9 months	12 months
3-stage 'fit to attend' assessment	X					
'Readiness to Change' questionnaire	X					
Participant information questionnaire		X				
Anthropometric measurements (height: weight, BMI, waist circumference)		X	X	X	X	X
BMI health risk classification		X	X	X	X	X
Physical fitness assessment (Alternative Aerobic Assessment)		X	X	X	X	X
Food diary		X	X			X
Task Analysis Questionnaire		X	X			X
Physical activity questionnaire		X	X			X

Measures	Time point					
	Pre-course	Week-1	Week-12 (3 months)	6 months	9 months	12 months
Smoking and alcohol histories questionnaire		X	X			X
General nutrition knowledge questionnaire		X	X			X
QoL questionnaire		X	X			X
Self-esteem questionnaire		X	X			X
Eating styles questionnaire		X	X			X
Participant satisfaction questionnaire			X			X
Focus groups			X			
Case studies						X

Note: This report presents specific evaluation data (shaded in grey) at week-1, week-12 and 12-months. See Fallowfield et al. (54) for full data set.

Data are presented as means or medians, with the standard deviation (SD) or inter-quartile range (IQR) being reported in parentheses. Descriptive statistics were determined for all variables and normality checks were performed. Where data were found to be not normally distributed, the equivalent non-parametric statistical analyses were applied (details of which have been included in the text as appropriate). Repeated Measures Analysis of Variance tests and Paired Samples t-tests were conducted to determine differences in continuous variables at three (week-1, week-12 and month-12) and two (week-1 and week-12) time points, respectively. Pearson Chi-square tests were conducted to determine differences in categorical variables at the same two and three time points. Cohen's d was calculated to evaluate the effect size of the intervention on outcome variables at month-12^{iv}.

DOfit outcome evaluation findings

Participant information

Data were collated from the initial 14 courses (12 Army; 2 Royal Navy) of this DOfit pilot initiative. The cohort comprised n=156 participants (n=132 males (85%); n=24 females (15%) who attended at week-1. Participants who attended from each service: Army, n=126 (81%), RN, n=30 (19 %).

At week-1, the mean age of participants was 32 (7) years (range: 18 to 52 years). Eighty-four per cent (n=131) of participants were Junior Ranks and 16 % (n=25) were Senior Ranks. Junior Ranks refers to SP with no rank through to Corporals and Senior Ranks refer to SP who have attained the rank of Sergeant through to Warrant Officer. No Commissioned Officers, who are the higher ranked SP in Defence, participated in the DOfit pilot initiative. The ethnicity of participants reflected the Defence population. 90 % (n=134) of participants described themselves as White ethnicity and 10 % (n=15) described themselves as either Black, Asian or other specific ethnic minority group. Educational levels of participants varied, with 57 % (n=71) of participants receiving education up to GCSE level and 43 % (n=54) to above GCSE level.

Programme adherence

A challenge for the DOfit programme was the availability of participants to undertake follow-up measurements around work schedules, and participants being tasked away from the unit on duty. This is business as usual for the military, so alternative

^{iv} A Cohen's d of 0.2 was considered to be a 'small' effect size, 0.5 a 'medium' effect size, and 0.8 would be a 'large' effect size. Meaning that if 2-groups' means did not differ by 0.2 SD or more, the difference should be considered to be trivial, even if it is statistically significant.

measurement opportunities were scheduled where possible. Fitness test follow-up data were the most challenging to collect, which resulted in relatively low participant numbers. From baseline (week-1, attendance, n=156), n=115 (n=98 males; n=17 females) were available for week-12 measurements. This equated to 74 % of the original cohort. Reasons for non-attendance at the week-12 follow-up sessions included: drafted out of area (n=14); not available due to military duty (n=14); left military service (n=4); dropped out of the programme (n=4); other reasons (n=4), and no reason given (n=1).

At the 12-month follow up, a cohort of n=51 participants (n=38 males; n=13 females), were available for measurement, which equated to 33 % of the original cohort. Reasons for non-attendance at the 12-month follow-up sessions included: dropped out of the programme (n=31); posted out of area (n=23); left military Service (n=20); not available due to military duty (n=8); and no reason given (n=12). In addition to those reasons cited at week-12, reasons for non-attendance included the DHWA PTIs being relocated to another unit, which routinely happens for military roles/ SP on a 2-yearly basis. At 12-months, this impacted upon n=11 participants.

Adherence refers to a participant following the requirements of an intervention as planned. From DOfit group session nominal rolls, it was evident that a number of non-attenders to the week-12 and 12-month measurement points were still actively engaged with the programme. However, despite this continued engagement, which evidenced an intent to continue to change behaviours, the outcomes for these participants were not captured. Programme adherence at 12-weeks was therefore at least 74 %, and at 12 months was at least 33 % of the original cohort.

Comparison of week-1 and week-12 measurements

Of those who attended week-12 assessments, n=57 (50 %) were available for a follow-up fitness test. Seventy-nine percent (n=45) of those assessed recorded an improvement in fitness, where fitness increased from week-1 to week-12 by 20.7 (22.3) watts (95% CI 15.4 to 27.8; $P<0.001$, $d=-0.4$), equating to a relative improvement of 8.8 (10.2) %.

The mean change in body weight over 12-weeks, for n=115 participants, was a loss of 2.1 (3.1) kg (95% CI -2.7 to -1.5; $P<0.001$, $d=0.1$). Changes in weight ranged from a loss of 9.8 kg to a gain of 8.1 kg. Thirty-eight per cent of participants recorded a weight loss of over 3 %, and 16 % recorded a weight loss of over 5 %. Change in waist circumference over 12-weeks ranged between a decrease of 18.0 cm and an increase of 17.1 cm, with a mean decrease of 3.0 (4.5) cm (95% CI -3.0 to -2.1; $P<0.001$, $d=0.3$). Seventy-nine percent of those measured in week-12 recorded a decrease in waist measurement: 51 % 0 to 5 cm; 22 % between 5 and 10 cm; and 6 % over 10 cm.

Participants (n=115) were classified for their risk to health, according to their BMI and waist circumference measurements taken at week-1 and week-12. Two per cent of participants entered the 'no increased risk' category, whilst there was a 9 % decrease in the number of participants classified as being at 'very high risk'. This finding was not statistically significant.

The nutrition knowledge of participants increased over 12-weeks from a score of 56 (8) % at week-1 to 60 (9) % at week-12 (95% CI 2.3 to 7.3%; $P < 0.01$, $d = -0.6$, $n = 32$). There were no measurable differences in participants' self-esteem over the 12 weeks (week-1, 16.9 (5.9) vs. week-12, 18.7 (4.8), $n = 29$).

Further detailed information regarding the comparisons of the week-1 and week-12 data are available in the interim evaluation report (59).

Comparison of week-1, week-12 and 12-month measurements

Fitness measurements in both week-1 and week-12 were collated from $n = 57$ participants, and $n = 15$ participants at 12-months. To assess potential sampling bias in physical fitness data, week-1 data of follow-up test attenders and non-attenders were compared for week-12 and 12-months; no differences were found. Nevertheless, caution should be applied to data interpretation. Seventy-three percent ($n = 11$) of those assessed recorded an improvement in fitness level, where fitness improved from week-1 to month-12 by 21.7 (23.7) watts (95% CI 10.7 to 32.6; $P < 0.05$, $d = -0.4$; equating to a relative improvement of 9.2 (10.5) % (Table 5).

Table 5: Physical fitness, body weight and waist circumference at week-1, week-12 and month-12 of the DOfit programme; mean (SD), absolute change, relative change (%) and 95% CI. April 2016-June 2017

Variable	Week-1	Week-12	Month-12	n	Week-1 versus month-12		
					Change	%Change	95% CI
Fitness (watts)	249.1 (36.4)	258.6 (34.8)	270.7 (37.2) *†	15	21.7 (23.7) *	9.2 (10.5)	10.7 to 32.6
Waist circumference (cm)	111.3 (12.9)	108.4 (12.9) ***	107.4 (13.0) ***	43	-3.9 (5.6) ***	-3.5 (4.8)	-5.6 to -2.2
Body weight (kg)	108.5 (17.9)	106.8 (18.0) **	105.6 (16.5) *	45	-2.9 (7.7) *	-2.4 (6.1)	-5.2 to -0.6

Notes: * P <0.05, ** P<0.01, *** P<0.001 Repeated Measures Analysis of Variance.

† P<0.05 Repeated Measures Analysis of Variance ; difference to week-12.

The number of participants (n) relates to those measured at month-12.

Of those attending the 12-month assessment, n=43 (84 %) completed a follow-up waist circumference measurement. Change in waist circumference over the 12 months ranged between a decrease of 18.8 cm and an increase of 5.1 cm. There was a mean decrease of 3.9 (5.6) cm (95% CI -5.6 to -2.2; $P < 0.001$, $d = 0.3$) equating to a relative decrease of 3.5 (4.8) %. Mean waist circumference remained similar between week-12 and month-12 (Table 5).

Of those attending the 12-month assessments, n=45 (88 %) completed a follow-up weight measurement. The mean change in weight over 12-months was a loss of 2.9 (7.7) kg (95% CI -5.2 to -0.6; $P < 0.05$, $d = 0.2$), which equated to a relative loss of 2.4 (6.1) %. Changes in weight ranged from a loss of 36.3 kg to a gain of 9.3 kg. Mean body weight was maintained between week-12 and month-12 (Table 5). Thirty-three per cent of participants recorded a weight loss of over 3 %, and 11 % recorded a weight loss of over 5 % at 12 months. Improvements in BMI health risk classification observed at week-12 were maintained at month-12.

Of those attending the 12-month assessments, n=12 (24 %) completed a follow-up nutrition knowledge questionnaire. The improvement in nutrition knowledge over 12 months was 9.7 (12.7) % (not statistically significant) (Table 5). There was some change in nutrition knowledge between week-12 and month-12.

Of those attending the 12-month assessments, n=9 (18 %) completed a follow-up self-esteem questionnaire. There was a mean increase of 35.1 (40.8) % in self-esteem over the 12 months (Table 6). There was some improvement in the self-esteem of participants between week-12 and month-12.

Table 6: Nutrition knowledge, QoL and self-esteem at week-1, week-12 and month-12 of the DOfit programme; mean (SD) or median [IQR], absolute change, relative change (%) and 95% CI. April 2016-June 2017

Variable	Week-1	Week-12	Month-12	n	Week-1 versus month-12		
					12-month Change	12-month %Change	95% CI
Nutrition Knowledge	56.3 (7.6)	59.8 (8.6)	61.1 (4.9)	12	4.8 (6.4)	9.7 (12.7)	-1.6 to 11.0
QoL: Physical Function	85.0 [71.3-100]	97.5 [82.5-100]	95.0 [85.0-100]	8	0.0 [-1.3-6.3]	0.0 [-2.1-7.3]	-15.0 to 15.0
QoL: Role limitations due to: Physical Health	87.5 [68.8-100]	87.5 [50.0-100]	100 [75.0-100]	8	0.0 [-31.3-31.3]	0.0 [-35.4-50.0]	-37.5 to 50.0
Emotional problems	100 [100-100]	100 [100-100]	100 [100-100]	8	0.0 [-8.3-0.0]	0.0 [-8.3-0.0]	-16.5 to 33.5
QoL: Energy/fatigue	55.0 [45.0-71.3]	57.5 [45.0-66.3]	60.0 [50.0-70.0]	8	5.0 [-1.3-11.3]	7.7 [-4.4-25.0]	-12.5 to 20.0
QoL: Emotional Wellbeing	78.0 [59.0-86.0]	72.0 [67.0-77.0]	80.0 [72.0-84.0]	8	4.0 [-9.0-14.0]	5.1 [-9.8-25.6]	-20.0 to 24.0
QoL: Social Function	88.0 [81.5-94.0]	88.0 [88.0-88.0]	100 [88.0-100]	7	12.5 [0.0-12.5]	14.3 [0.0-17.1]	-6.5 to 13.0
QoL: Pain	69.0 [45.0-90.0]	73.0 [62.3-91.0]	68.0 [45.0-80.0]	8	-6.3 [-20.6-10.0]	-10.0 [-22.6-11.5]	-18.0 to 16.5
QoL: General Health	52.5 [48.8-70.0]	57.5 [42.5-75.0]	55.0 [50.0-75.0]	8	5.0 [-2.5-6.3]	8.6 [-5.0-11.7]	-2.5 to 10.0
Self Esteem	16.2 (4.0)	18.2 (3.1)	20.9 (4.5)	9	4.7 (5.3)	35.1 (40.8)	-1.0 to 10.3

Healthier weight: Defence insights to tackling a national challenge

Notes: QoL measured on a scale of 0–100 with increasing score indicating improving QoL
The number of participants (n) relates to those measured at month-12.

Evaluation of DOfit programme relative to PHE KPIs

The DOfit Programme was assessed relative to the relevant PHE KPIs for a tier-2 weight management intervention at 12-months (Table 7) (67). The DOfit programme was generally compliant with the PHE KPIs. Areas of non-compliance and the impact of this non-compliance concerned: the universality of ‘participant data is recorded, analysed and reported’, which reduced the DOfit participant data availability for inclusion in the outcome evaluation; and, ‘100 % of completers achieve and maintain a clinically significant weight loss of 5-10 % at 12 months’, which potentially could also have been a consequence of incomplete data recording.

Table 7: DOfit programme assessed against relevant tier-2 PHE KPIs at 12-months

	Key Performance Indicator	DOfit programme outcomes meeting the KPI	Evidence
1	100% of participants enrolled in the service meet, as a baseline, the eligibility criteria as defined in the PHE Guide to Delivering and Commissioning Tier 2 Adult Weight Management Services.	Yes	DOfit outcome data
2	60% of participants complete the active intervention	No: 10% of participants completed the fitness test; 28% of participants measured waist circumference; 29% of participants had their body weight measured.	
3	100% of commissioned services are developed using specialists, as defined in the PHE Guide to Delivering and Commissioning Tier 2 Adult Weight Management Services.	Yes	DOfit working group

	Key Performance Indicator	DOfit programme outcomes meeting the KPI	Evidence
4	100% of staff receive training specific to the proposed service.	Yes	DHWA training course outline, training programme and DHWA assessment matrix
5	XX% of individuals enrolled in the service are from identified high risk groups	Partly met: 10% of participants were from specific minority ethnic groups. Low income and individuals with physical and intellectual disabilities not recorded	DOfit outcome data
6	100% of participant data is recorded, analysed and reported in line with the minimum dataset outlined in the PHE Guide to Delivering and Commissioning Tier 2 Adult Weight Management Services.	No: Incomplete participant data recording on some DOfit courses	DOfit Outcome Data
7	i) 100% of enrolled participants are invited to provide feedback at the end of the active intervention.	i) Yes	Participant satisfaction questionnaire
8	75% of participants will have lost weight at the end of the active intervention	Not calculated	
9	30% of all participants will lose a minimum of 5% of their (baseline) initial body weight, at the end of the active intervention	11% recorded a weight loss of over 5% at 12-months	DOfit Outcome Data

	Key Performance Indicator	DOfit programme outcomes meeting the KPI	Evidence
10	i) 35% of completers provide a weight measure at 6 months. ii) 20% of completers provide a weight measure at 12 months	i) No, measurements taken at 12-weeks ii) Yes, 29% provided a weight measure	DOfit Outcome Data
11	XX% of completers at 12 months have a body weight that is lower than their (baseline) initial body weight	Not calculated	

Evaluation limitations

The lack of a control arm in this quality improvement service delivery pilot study does not allow the effect of the intervention per se to be determined in this context. Moreover, logistic issues within a complex work environment impacted upon planned follow-up and data reporting, such that measured programme adherence was poor. Thus, mean sample data from the outcome evaluation element of the pilot study should be treated with caution.

Section-3: DHWA training and DOfit programme; process evaluation

Introduction

This section presents the process evaluation of the implementation, integration and maintenance of the DOfit programme. A process evaluation determines whether interventions, which involve a number of programme activities, have been implemented as planned and have resulted in the intended outputs. The DOfit programme process evaluation comprised qualitative analyses of three elements:

- DHWA and DOfit participant focus group data collected at week-12
- DOfit participant case studies providing personal reflections on experiences of undertaking the behaviour change DOfit programme within Defence
- interviews with (Army) leaders who had varied involvement in the DHWA training and DOfit courses from policy through to delivery

The process evaluation was conducted simultaneously with the DOfit outcome evaluation, to examine the processes through which the intervention generated outcomes. As such, these data were vital to support quality improvement, and specifically for enhancing programme adherence and effectiveness within the military setting. The main aim of the process evaluation was to develop an understanding of why the DOfit intervention worked for some courses delivered in units, but was less effective in others. This is important learning to capture in order to improve future service delivery.

Evaluation methods

The process evaluation of the DHWA training and DOfit programme in Defence were assessed through the following measurement approaches:

Focus groups

The 60-minute focus groups were undertaken at week-12. The aims of the focus groups were to ascertain views, perceptions and feelings of DHWAs and DOfit participants, and to understand their overall experience of delivering or receiving the programme. The participant focus groups comprised those who volunteered to share their views from 4 Army and 2 RN DOfit courses, who provided informed consent to participate. The DHWAs of these same courses attended separate focus groups to the participants. Two researchers, who were independent of the DOfit working group, facilitated the

discussions. A semi-structured approach was adopted, involving both closed and open questions (refer to Annexe, Section 5), with an opportunity to include emergent themes into subsequent focus groups, as these were undertaken in an iterative manner.

Case studies

Case study data were collected from n=16 DOfit participants (Army, n=10; RN, n=6), from all DOfit courses initiated prior to July 2020 (not just the sample included in the programme evaluation; Section-2), using the proforma provided in the Annexe in section 6. Five of the sample were Commissioned Officers, 8 were Senior Ranks and 3 were Junior Ranks. Case studies were provided at 12 months. All case study participants had completed at least the first 12-weeks of the DOfit programme, but not all had completed 12-months.

Leader interviews

The purpose of the interviews was to provide an additional perspective to inform the process evaluation that was distinct from the DHWAs or DOfit programme participants. Thus, the interviews determined the leaders' views on the implementation, reach, efficacy and adoption of the DHWA training and DOfit programme. Army leaders undertaking a range of health and wellbeing roles were identified. The Army was selected for the leaders' interviews as engagement with the DOfit programme was most mature in this service. Critical insights from these leaders from the 'early adopter' service would therefore provide a more considered perspective to inform future developments and quality improvement.

Individual face-to-face interviews were set up to evaluate the DHWA training and the DOfit programme processes. Each interview was 25 minutes in duration and were all undertaken after the 12-month time point. Participation in the interviews was voluntary and informed consent was sought. The views from four leaders were collated; leader participation was dependent upon their understanding the aims of the intervention and who had active roles in health and wellbeing in Defence, including policy promulgation. The leaders held a range of ranks within Defence and therefore could provide views from different perspectives. The interview proforma (refer to section 7 in the Annexe) questions were designed to collate feedback on the leaders' perceptions of the barriers and strengths of the programme. The proforma was independently validated by a researcher from the Faculty of Medicine, University of Southampton, UK. Interviews were conducted at the leaders' work locations by an interviewer who was independent of the DOfit working group.

RE-AIM evaluation framework

The DHWA training and DOfit programme were systematically assessed against the RE-AIM Evaluation Framework (68), drawing upon quantitative and qualitative evidence gathered from the process, impact and outcome evaluation (refer to section 8 in the Annexe).

Data analysis

The qualitative data collection and analysis methods were overseen by colleagues from PHE and Army Health researchers who were trained and experienced in qualitative research methods.

Data analyses were undertaken by researchers who had not been involved in the DOfit programme development and service delivery. The composite notes taken from the recordings of the focus groups and leader interviews, in addition to the case studies, were evaluated using thematic analysis (69, 70, 71). Data saturation was achieved, which allowed for themes to be confirmed and conclusions reached.

Evaluation findings

Focus groups

Eleven main themes were identified from the focus groups and these are documented in the Annexe in section 9. Extracted from the main themes, [Table 8](#) presents the frequently cited positive characteristics of the programme, and [Table 9](#) presents the barriers to behaviour change and DOfit participant/DHWA suggested solutions for these issues to inform programme improvement.

Table 8: Focus group evaluation summary for positive characteristics of the DHWA training and DOfit programme

Main themes	Positive characteristics
DOfit programme	<ul style="list-style-type: none"> • DOfit syllabus (content and structure) • content useful and informative; learned new information on nutrition and physical activity • balance of programme (education, group discussion and physical activity) • interactive education and training approach • participants particularly liked the sessions addressing barriers and facilitators; eating out; food swaps, and how much energy is needed
DOfit programme context/ environment	<ul style="list-style-type: none"> • group support ('not feeling alone') • valued participant involvement • healthy (positive) competition • broke down rank barriers • appropriate use of apps and social media platforms
DHWA deliverers	<ul style="list-style-type: none"> • non-judgemental support • encouraging approach • able to breakdown rank barriers • approachable and willing to get involved; open to sharing own experiences • knowledgeable, enthusiastic and passionate about the programme

Table 9: Focus group evaluation summary on barriers to behaviour change and proposed solutions, for the DHWA training and DOfit programme

Main themes	Barriers	Proposed Solutions
Experience of the DOfit programme – what did not work?	Lack of support and understanding from the Chain of Command, including difficulty in securing time during the working day for attending scheduled DOfit session	Ensure unit-wide awareness and understanding of the DOfit programme Chain of Command and unit support to the DHWA to deliver the DOfit over the 12 months Chain of Command and unit support and prioritisation for the SP to attend DOfit sessions over the 12 months
	Group representativeness. Lack of senior ranking personnel attending DOfit courses	Ensure DOfit courses are delivered to all personnel at risk of obesity related ill-health, not just those from junior ranks
	Lack of continued structured sessions after week-1	Unit Health Committee to provide governance and assurance to the DOfit programme, to ensure that the DHWA is supported to follow the planned programme, providing weekly follow ups (weeks 2-12), and monthly follow ups thereafter
	Lack of prior information and awareness with regards to what the DOfit course entails	Unit Health Committee to promote the DOfit to support SP
Influence of others	Peers stigmatising participants for being part of a weight loss programme due to lack of understanding about the DOfit programme	Unit Health Committee to promote an understanding of the DOfit programme across the unit, raising awareness of its potential to support SP

Main themes	Barriers	Proposed Solutions
Personal and socio-cultural barriers	Military working environment made it difficult to fully engage with the programme and increase physical activity levels	Support DOfit participants to undertake physical training as part of the working day
	Lack of opportunity to eat healthier options within unit	Unit Health Committee to monitor healthier options available on the dining facility provision using the Defence Nutrition Advisory Service menu review tool

Case studies

The key points from the case studies in terms of this process evaluation are presented in [Table 10](#) and taken from (Army, n=10; RN, n=6), and all DOfit courses initiated prior to July 2020. Case study data are reported in full in the Annexe in section 10.

Table 10: Participant case study process evaluation key points

	Key Points
1	Participant awareness of the DOfit programme came from communications within the military establishment or word of mouth
2	Participants found it easy to implement the programme's behaviour change approach
3	The impact of the education and understanding of how to apply this knowledge had contributed to positive physical (for example, weight loss, improved fitness) and psychological changes (for example, self-confidence, motivation)
4	Social support (of the DHWA and co-participants) was deemed important in encouraging and maintaining behaviour change. Lack of such support, especially from the Chain of Command was stated as being a barrier
5	Formalised, regular contact to maintain support (for example, through planned follow-ups) was considered critical to longer-term behaviour change
6	All case study participants would recommend the DOfit course to others but emphasised the importance of an individual's readiness to change, self-motivation and prioritisation to change were acknowledged as being essential for success
7	Perceptions of the impact of the military environment (particularly the food environment), and military life, were reported as barriers to behaviour change
8	Participants felt privileged to have been given the opportunity to attend the course and praised the DHWAs

Leader interviews

The dominant themes identified from the leader interviews can be seen in the Annexe in section 11. The key emerging themes from the leader interviews in terms of this process evaluation are presented in [Table 11](#).

Table 11: Leader interview process evaluation key points

	Key Points
1	Supporting SP to improve their health behaviours, was identified as a high priority issue to increase the number of SP able to deploy
2	The DHWA training and DOfit programme provided much needed knowledge and a consistent approach for both those delivering and receiving the programme
3	The behavioural change focus of the DHWA training and DOfit programme was identified as the main strength, with the responsibility for change being placed on the SP
4	The importance of the DOfit's multidisciplinary approach to supporting SP was acknowledged, where the nutrition and one-to-one sessions were identified as the most valued and well-received sessions
5	Chain of Command 'buy-in' was deemed essential for programme success, where the Chain of Command could protect time for the DHWA to deliver the training, and time for SP to participate in the intervention
6	The main challenges to DOfit efficacy were frequent operational changes for SP in each military unit, competing priorities, and the sensitivities of approaching SP to talk about their weight
7	Concern was expressed that the DOfit is currently driven forward by a small team, with one individual leading the way
8	A need for the organisation to take ownership of the programme, and to establish it within Defence as an enduring solution was identified

DOfit programme assessed against the RE-AIM evaluation framework

The DHWA public health workforce training and DOfit programme (including courses delivered up to July 2020) were assessed relative to the RE-AIM evaluation framework (68) (Table 12).

Table 12: The DHWA training and DOfit programme assessed against the RE-AIM evaluation framework

Framework	Who	Description	Measurement method
Reach	Individual	The absolute number, proportion, and representativeness of individuals who are willing to participate in a given initiative, intervention or programme.	<p>Rank, education level</p> <ul style="list-style-type: none"> • Pilot study DOfit participants ranged in rank from Service entry/no rank to Warrant Officer. 16% senior rank; 84% junior rank • There was a broad range of educational levels (57% received education up to GCSE level and 43% to above GCSE level) <p>Participant information: age, gender, ethnicity</p> <ul style="list-style-type: none"> • Age range 18 years to 52 years; mean age, 32 (7) years • The balance of sexes reflected the Service population (85% male; 15% female) • The ethnicity of participants reflected the Defence population. 90% of participants described themselves as White ethnicity and 10% described themselves as either Black, Asian or other specific ethnic minority group <p>Readiness to change</p> <ul style="list-style-type: none"> • Interim report data at baseline (week 1): 2% pre-contemplation stage; 7% contemplation stage; 20% action stage; and 72% maintenance stage

Framework	Who	Description	Measurement method
Efficacy	Individual	The impact of an intervention on important outcomes, including potential negative effects, QoL and economic outcomes.	<p>Anthropometrics of completers</p> <ul style="list-style-type: none"> 12-months: body weight -2.4%; waist circumference -3.5% <p>QoL/mental wellbeing</p> <ul style="list-style-type: none"> 12-months (median): QoL unchanged; self-esteem +35.1%. Not statistically significant (NS) <p>Nutrition knowledge</p> <ul style="list-style-type: none"> 12-months: +9.7%. NS <p>Physical fitness</p> <ul style="list-style-type: none"> 12-months: Physical fitness +9.2%
Adoption	Setting	The absolute number, proportion, and representativeness of settings and intervention agents who are willing to initiate a programme (for example, for DOfit, this would be single service awareness and adoption).	<p>DHWA number trained, and number delivering</p> <ul style="list-style-type: none"> n=608 DHWA trained (as of July 2020) the number routinely delivering DOfit courses or one-to-one support cannot be confirmed <p>Pilot setting details</p> <ul style="list-style-type: none"> pilot DOfit courses were initiated by Army and RN as of July 2020, DOfit programmes have also been initiated in the RAF and Defence Primary Healthcare, with courses scheduled for the Military Defence Police <p>Cost</p> <ul style="list-style-type: none"> no new funding provided to the DOfit
Implementation	Individual	The clients' use of the intervention strategies. Resources used by demographic factors.	<p>Experience interviews</p> <ul style="list-style-type: none"> participant focus groups and case studies indicated generally positive engagement with the DOfit programme and use of programme resources

Framework	Who	Description	Measurement method
			<p>Satisfaction questionnaires</p> <ul style="list-style-type: none"> • participant satisfaction surveys indicated generally positive engagement with the DOfit programme and use of programme resources <p>Process interviews</p> <ul style="list-style-type: none"> • participant satisfaction surveys, focus groups and case studies indicated generally positive engagement with the DOfit programme and use of programme resources • specific local delivery issues raised where the programme was not delivered as planned. This tended to concern the scheduling of follow-ups (for example, not weekly during months 1-3), and the quality of follow-up support
	Setting	The intervention agents' fidelity to the various elements of an intervention's protocol, including consistency of delivery as intended and the time and cost of the intervention.	<p>Treatment fidelity, experience/process interviews</p> <ul style="list-style-type: none"> • evidence from independent training review, training audit and student evaluations support that the DHWA training was delivered as planned • focus groups and case studies indicated that there was a mix of DOfit delivery quality and style; this was either planned by the local deliverers to account for unit operational issues, or unplanned and was a breach of compliance
Maintenance	Individual	The long-term effects of a programme on outcomes after 6 or more months after the most recent intervention contact.	<p>Efficacy outcomes at 12 months (9 months post programme)</p> <ul style="list-style-type: none"> • programme outcomes (weight, waist circumference, physical fitness) were maintained at 12-months, but further follow-up in the pilot sample has not been possible in all participants

Framework	Who	Description	Measurement method
			<ul style="list-style-type: none"> • case studies reported a mix of experience post-programme. Participants in a supportive environment maintained their improved health behaviours and were motivated to do so. Participants without organisational support did not maintain their improved health behaviours, and some had returned to a situation where they were struggling with weight management issues. However, all participants providing feedback felt better prepared (knowledge and skills) to address their relapses and return to the programme, if support was provided (evidence from follow-up discussions with case study respondents)
	Setting	The extent to which a programme or policy becomes institutionalised or part of the routine organisational practices and policies.	<p>Leader interviews/ questionnaires, policy evaluation</p> <ul style="list-style-type: none"> • The DHWA training and DOfit programme are detailed in Defence policy (Armed Forces People Support, Policy owner) and in Defence/single Service delivery (Army, Defence Primary Healthcare, RAF, Royal Marines, RN). <p>Future implementation</p> <ul style="list-style-type: none"> • DHWA training adopted as part of Army, Royal Marines and RN PTI training • Future DOfit delivery is being actively managed at a single service level (Army, Royal Marines, RN)

Section-4: General discussion and Defence insights for tackling overweight/obesity in the UK

DOfit as part of a whole systems approach to promoting healthier weight

The development of any health improvement programme will face challenges, and the DHWA training and DOfit programme were no exception. Defence and its people are geographically dispersed across a wide area of the UK, and globally in overseas territories. Moreover, SP represent a mobile workforce, routinely changing work locations on a 2 to 3-year cycle. These factors are perhaps not unique to Defence. However, it does provide context for the relevance of a whole systems approach that focuses on supporting leaders, throughout Defence, to change mindsets and enable improvements to structural environmental factors.

It is evident that senior leaders valued the DOfit programme as a means to support individual behaviour change. However, learning indicates that further work is required to embed such an intervention as part of holistic systems approaches, in the same way that local authorities deliver change through whole systems approaches (49). Work is now underway within Defence to develop and test a System for Health, which embodies a whole-system, multi-component, multi-disciplinary approach. The System for Health aims to empower SP whilst also recognising the role of environmental and social factors in facilitating opportunities for SP to choose healthier options and improve their health.

DOfit – how did it fulfil its aims?

This is the first time that physical fitness, mental wellbeing and body weight of UK SP living with excess weight have been investigated relative to (diet, physical activity, alcohol and smoking) health behaviours. Furthermore, the DOfit programme also investigated perceptions of facilitators and barriers to positive health behaviours in the military environment/setting. The significance of this learning should not be underestimated.

The outcomes from piloting the DOfit programme, in terms of improving fitness, reducing waist circumference and reducing body weight, represented the combination of the DHWA training for practitioner programme deliverers, and engagement and

adherence with the DOfit of SP participants. It is important to acknowledge a priori that the 14 DOfit courses included in the outcome evaluation represented the first time that newly DHWA-trained PTIs had delivered a DOfit course, and the participants were the first 156 SP to engage with the DOfit programme in Defence. From the focus groups and the case studies it was evident that there were some negative beliefs on the part of participants prior to the start of their DOfit experience. However, the qualitative research demonstrated that feedback on the DOfit programme was positive and in some specific cases the DOfit proved to be transformational. Quantitative data capture and reporting were variable between DOfit courses, where collation of programme outcome data to inform the evaluation was dependent upon the engagement and actions of the DHWA course deliverer in situ.

Adherence to the DOfit programme at week-12 was 74%, which is comparable with behaviour change programmes in non-military settings (72). DOfit participants not attending the week-12 measurements reported this being due to duty commitments or having left the services, with 3% having purposefully left the programme. Programme adherence was 34% at 12-months, which compares favourably with the PHE KPI benchmark standard of 20% of completers providing a weight measure at 12 months (67). The DOfit approach encourages participants to work together and to provide mutual support, building on the 'values and standards' of the Armed Forces. Participants positively cited 'not feeling alone' as an essential quality of the programme which may have contributed to their adherence.

At week-12, DOfit participants' mean physical fitness improved by 9%, which contributed to increased numbers of participants passing their service fitness test. Whilst, on average, waist circumference decreased by 3% and body weight decreased by 2%. These small, yet positive changes in fitness and weight were maintained by those attending follow up at 12-months. The potential of DOfit is highlighted by a RN course, which enabled 83% of participants who had failed their mandatory fitness test prior to week-1, to pass their fitness test by week-12. The challenge faced by Defence is to replicate the characteristics observed during this successful DOfit course for all courses. Positive characteristics of this course, according to feedback from the focus group, included: the highly motivated and enthusiastic (PTI) delivery team; a mix of male and female participants, of varied ranks and military experience, and varied trade roles; and the investment of structured time on course in building supportive peer to peer relationships at the start of the programme.

DOfit participants were generally motivated to increase their physical activity, whilst also gaining knowledge that empowered them to undertake their own physical training outside of organised DOfit sessions. Thus, the DOfit programme could provide a timely contribution to returning SP to operational fitness. These improvements observed in physical fitness are important outcomes for Defence, as an individual's 'fitness for task'

affects: operational deployment; prevention of and reduced risk of MSKI; and supports the recovery and retention of skilled and experienced SP.

There were improvements in nutrition knowledge with participants reporting being more confident in making informed decisions about their eating behaviour and food options. Indeed, participants found the DOfit sessions that provided practical knowledge and skills on nutrition, diet, food options and evaluating individual energy requirements to be the most useful. Alcohol consumption was specifically perceived as being a significant contributor to energy intake and hence excess weight. In the interim report (59), it was noted that a high proportion (61%) of participants attending the DOfit programme were classified as being at increased risk from their self-reported alcohol intake, which was consistent with government statistics on alcohol usage in the UK Armed Forces (73). However, this level of alcohol consumption was higher than the UK civilian population (74, 75), and has been identified as a difficult behaviour to change due to links between alcohol consumption and military culture (76). Moreover, the military food environment was generally regarded as not supportive of healthier food and drink options, which resonates with barriers faced to accessing healthier food options observed in the wider civilian population.

DOfit participants tended to score high for a variety of measures of QoL and self-esteem relative to comparable civilian overweight populations (77), which indicated generally positive perceptions of wellbeing. High week-1 scores might partly explain the relatively modest changes in QoL and self-esteem at week-12 and 12-months. But also, there were relatively poor questionnaire response rates, especially at 12-months. Nevertheless, the lowest mean scores were for energy and fatigue and general health, which agree with other Defence health interventions (78). These low scores may be related to the physiological effects of a participant's excess body weight and poor physical fitness, especially within the military environment where social norms emphasise an ideal body weight and physical fitness. The questionnaire data were supported by data from the focus groups and case studies, where DOfit participants reported 'generally feeling better in themselves', of 'taking responsibility', 'regaining self-respect', and 'empowerment'.

Some DOfit participants reported broader benefits from their participation in the programme, including: becoming more mindful and feeling empowered and informed about food options; changes in body shape; improved fitness and health being associated with better sleep; lowered blood pressure; improved mood; and increased confidence and motivation. Some also reported secondary benefits in improving the diet of participants' partners and children. It is important to emphasise that these outcomes were achieved despite very limited awareness of the DOfit programme across Defence at the time, and a general lack of support and appreciation for the potential benefits from SP participating in the programme.

Comparison of outcomes with similar health behaviour change programmes

The Armed Forces of other nation states have developed health behaviour change programmes. Those initiatives that have published evaluation data for their programmes have noted good outcomes for programme participants. The L.I.F.E. (79) and LE3AN (80) programmes, both developed in the US, reported 5-7% weight loss over 12 months. Participants of the L.I.F.E programme had lost 3% of their body weight at 1 month, and 5% at 6 months. However, the rate of weight loss decreased during the second 6 months up to 12 months. The LE3AN programme was associated with 5% body weight loss at 3 months, 7% at 6 months, with weight loss plateauing between 6–12 months.

A 6-month weight management programme for German military personnel adopted a less intensive follow-up than the L.I.F.E. and LE3AN programmes (81). Participants achieved 4.5% weight loss at 6 months, which reduced to 3.5% at 12 months. Civilian weight management programmes specifically focussing mainly on male populations have also reported positive outcomes. One such programme administered within Scottish football fans achieved a 4% reduction in body weight at 12 months (82).

The weight loss outcomes of the DOfit programme have not moved through such a rapid trajectory compared with published programmes. This could relate to the DOfit courses included in the evaluation being early adopters. Nevertheless, these courses have generated important learning, which should enable future courses to benefit through increasing the effectiveness of delivery and hence improving programme outcomes.

Differences when comparing with other interventions may also be partly explained in the planned delivery approach. The published programmes were typically delivered by dietitians and/or health professionals experienced in health behaviour change weight management support (79, 80, 81, 82). In contrast, the DOfit approach purposefully identified PTIs as the intervention ‘change agents’ in Defence. PTIs are experienced ‘physical activity trainers’, who were then additionally provided with bespoke Association for Nutrition certificated Level-4 DHWA training. The PTIs had only been trained a few weeks prior to running their first course; it is the findings from the evaluation of these first DOfit courses that are presented in this report. This planned approach (ie DHWA training of PTIs to support DOfit delivery) was designed to ensure that there would be an enduring solution for supporting health behaviour change in Defence, which could be resourced without a significant up-lift in funding.

The relative inexperience of the course deliverers (specifically with respect to person-centred, health behaviour change support), and the novel approach of the programme

at the time in Defence, could both have contributed to the lower level of weight loss at 12-months in these courses. In more recent DOfit courses, where delivery has been shared between PTI and Defence primary healthcare practitioners, the programme appears to be more effective. Thus, as PTIs develop their practice, and Defence develops a multidisciplinary community of health behaviour change practitioners, the efficacy of delivery should improve. This emphasises the need for trained and experienced health and wellbeing “champions” in Defence, who are specifically tasked – with the requisite authority and responsibility – to lead on health and wellbeing delivery at unit level. Formal DHWA mentoring, by a Senior Registered Dietitian, is being implemented across Defence to improve programme effectiveness.

Positive Commander/ Line Manager support, at all levels, was identified as important by DOfit participants in three of the six focus groups. Those participants who reported support from their Chain of Command highlighted how this made it possible to attend the programme follow-up sessions and make time to participate in physical activity. Conversely, a lack of Chain of Command support was reported as a barrier to DOfit participants putting their DOfit learning into practice in the workplace. Leadership and Chain of Command support were emphasised as essential for the success of the programme.

Programme quality improvement

The most commonly reported suggestion for programme improvement was to have more regular follow-up DOfit group sessions after the initial week-1 introductory sessions. Participants would also like the DOfit sessions to be mandatory/protected time. From an organisational perspective, it was suggested that the DOfit education should be included as part of initial (Phase-1) military training.

It was evident that, at an operational level, Chain of Command support was important to ensure participants gained the maximum benefit and value from attending the DOfit programme. Such support was variable and enabling Commanders/ Line Managers to understand the potential benefits of DOfit programme participation is key. Other areas, which could improve delivery is raising awareness of DOfit, as a standardised approach to health behaviour change, across the PTI workforce and amongst Defence primary healthcare practitioners. This could assist in generating greater understanding and knowledge of the programme in potential participants, which may allay fears, reduce stigmatisation and support engagement. Finally, wider awareness and appreciation across Defence could promote a more supportive “health culture” for those taking positive action to address their health behaviour.

Programme outcome and process evaluation considerations

The DOfit programme was based on intervention development work undertaken for Second Sea Lord's Feeding the Fleet Initiative (44, 45). The demographic of the participant group was consistent with diversity statistics for the UK Armed Forces (83). However, there was a lack of Commissioned Officer representation on the initial DOfit courses included in the evaluation, despite evidence that living with an unhealthy weight is an issue for all ranks (12, 19). Indeed, there was a perception amongst DOfit participants that weight management is viewed by Defence as a 'junior rank issue'. The evaluation was limited by the numbers included in these initial courses, the sub-optimal implementation of the planned intervention by some deliverers, a reliance on the deliverers for undertaking data collection, and incompleteness of the data collection. However, the programme was well-received by the DOfit participants and deliverers, with acceptable levels of adherence, resulting in comparable health improvement benefits relative to other similar – but significantly better resourced – programmes (81, 82).

Defence insights to tackling a national challenge – capturing the learning

Employers have a responsibility to support the health of their employees, and they can do this in a number of ways. These include: providing healthier food and drink options in the work place; creating opportunities to be physically active in and around the working day; helping staff to access appropriate health behaviour change support; signposting employees to evidence-based information, support and relevant programmes; reducing stigma in the workplace; and encouraging senior staff and line managers to lead by example (84). It is therefore unsurprising that the main themes of Defence learning from the DOfit quality improvement programme emphasise: leadership, and specifically health leadership; the importance of a supportive environment/setting; ensuring the programme is context-relevant and person-centred; and the importance of governance to ensure and assure quality service provision. This learning is detailed at [Table 13](#) in the following 'Next Steps' section.

Next Steps

Defence and PHE have identified key themes to further develop a whole systems approach to tackling overweight/obesity and to drive action. These are detailed at [Table 13](#).

Table 13: Next steps

Priority theme	Learning	Action
<p>Getting everyone's mindset right</p>	<ul style="list-style-type: none"> • pro-active, healthful leadership at all levels is essential • shared vision – Chain of Command, Unit Health Committee, DHWA, DOfit participants, DOfit participants' peers • unit “health and wellbeing champions” • consistent communications messaging (policies, programmes, processes and publications) 	<ul style="list-style-type: none"> • acknowledge the complexity of changing health behaviours to: inform flexible delivery of the evidence-based approach; and be context relevant (to each unit) and person-centred (ie apply data-informed adaptive learning principles to customise support in situ) • adoption of consistent, tri-service (Army, RAF, RN) health and wellbeing policy across Defence, but (context relevant) single service ‘person centred’ implementation/ intervention delivery • Defence Health and Wellbeing Leadership training to promote ‘health leadership’, sharing the required approach and identifying leader responsibilities • develop a ‘System for Health’ (a) Works “upstream” to prevent poor health <ul style="list-style-type: none"> - Acknowledges the primary required outputs of the organisation, but ensures ‘health’ is on the agenda of decision-making

Priority theme	Learning	Action
		<ul style="list-style-type: none"> - Considers the health implications of organisational (cross-sector) decisions - Target key determinants of health - Cross-function discussion on best use of resources to deliver this intent - Looks for synergies between health and other core objectives (collaboration) - Considers potential unintended consequences • DHWA as the acknowledged unit “health and wellbeing champion” • review policies, programmes, processes and publications to be aligned with a standardised, evidence-based message
<p>Environment/ context/ setting to support healthful choices</p>	<ul style="list-style-type: none"> • deliver a healthier food environment (eg provision, price, meal timing, labelling) • promoting an “active environment” (eg work scheduling, time within the working day, gym access, gym provision) • healthy workplace (clear and consistent expectations with respect to work and non-work routines, Commander/ line manager ‘example setting’) 	<ul style="list-style-type: none"> • develop m-HEAT (b) to characterise in-unit health environment • action plan to support healthier food environment • engage with policy owner (Defence Support) to: <ul style="list-style-type: none"> - Review dining facility environment with Defence Infrastructure Organisation - Review catering contracts/ provision - Review in-unit shop/ outlet provision • action plan to support healthier physical activity/ physical training environment • engage with single Service policy owner to:

Priority theme	Learning	Action
		<ul style="list-style-type: none"> - Review provision of exercise/gym kit - Review provision of support - Review provision of programmes • promote Chain of Command 'example setting'
<p>Person-centred, non-judgemental approach</p>	<ul style="list-style-type: none"> • evidence-based education to develop the knowledge, means (facilities for healthy dining and physical activity), opportunity (time), promoting self-responsibility • DHWA mentored to think, adapt and deliver tailored (flexible) support • participant supported to take ownership of their health behaviour change • clear lines of responsibility and accountability (leaders, DHWA, participants) 	<ul style="list-style-type: none"> • enshrined in Defence policy and single Service delivery strategies • adoption of person-centred health behaviour change training approach pan-Defence • development of (online) e-DHWA and e-DOfit to support training and delivery across a globally geographically dispersed organisation
<p>Governance</p>	<ul style="list-style-type: none"> • DHWA support and mentoring • structures of governance built into training, quality service provision, and programme delivery • assuring and maintaining the planned evidence-based provision • data capture, management, reporting 	<ul style="list-style-type: none"> • develop formal governance structure and assurance procedures for Defence • formalise DHWA training (52): <ul style="list-style-type: none"> - Training Requirements Authority, Armed Forces People Support, Chief of Defence People - Senior Training Delivery Authority, Army School of Physical Training • Appoint Senior Defence Registered Dietitian as DHWA mentor • Develop e-DHWA and e-DOfit (online) models to support

Priority theme	Learning	Action
		non-face-to-face and remote quality delivery in a dynamic, dispersed organisation <ul style="list-style-type: none"> • develop an on-line platform (c) to support standardised and consistent approach to delivery, archive evidence-based resources and assured data management

- Notes: (a) Adopting (and adapting) a Health in All Policies (85) Whole Systems Approach (49).
- (b) m-HEAT = military Health Environment Assessment Tool (86).
- (c) Wearable Integrated Lifestyle Management Application (WILMA) to operate across Defence, on personal and Defence appliances, to provide “An end-to-end, participant-practitioner, person-centred, anytime-anywhere, health behaviour change solution” (refer to Annexe, section 12).

Concluding remarks

The DOfit programme working group was set an ambitious task; to develop and deliver an evidence-based, effective, sustainable, multi-centred, organisation-wide, occupational health behaviour change (weight management) intervention for the UK Armed Forces – with no new resources.

Responding to this challenge has involved ingenuity, cross organisation co-operation and leadership at different levels. It is this combination and more that has delivered: a weight management intervention, where the planned DOfit programme is PHE tier-2 weight management services KPI compliant; and the Defence and Health Wellbeing Adviser training, which has been adopted by the single services and Defence primary healthcare, and has been certificated as a level-4 nutrition course by the Association for Nutrition.

These key components have been designed with the service user in mind, whether this is the PTI or health practitioner acquiring the knowledge and skills to deliver the programme through to the SP who have participated and benefited. This user-centred design is at the heart of what works for interventions in wider society, and unsurprisingly has been shown that it can work in Defence too. However, capturing the process and outcomes learning, to understand what works and what does not, has been key.

This report is testament to the commitment to share, evolve and improve the programme going forward. The barriers, enablers and learning acquired in delivering this quality improvement programme resemble the factors that most behavioural change programmes encounter. This learning from Defence serves to strengthen what we know about the importance of investing in delivery, and that effective facilitators – who know what they are talking about and espouse empathy and understanding in their approach – deliver successful results.

It also serves to remind that whilst it is valuable to provide support to change eating habits, be more physically active, learn how to cope, and achieve one's goals, action is ultimately needed to improve the environment in which people live their daily lives – ensuring that healthier food and physical activity options are the default. This requires a shift in mindset towards a whole systems approach and is something where learning from local authorities is helping to influence thinking in Defence.

The full implementation of the DOfit programme in Defence will require 'time-resource' in terms of Defence leadership, DOfit (DHWA) deliverers and DOfit participants – but not necessarily new capital nor contractual resource. Whilst there is evidence of some health leadership and traction, there is a need to maintain the resilience of the programme. This will require senior leadership direction, planned and coherent data

management, clear governance and assurance, and the setting of appropriate KPIs for monitoring quality, effectiveness and to inform ongoing programme improvement.

This work and the learning from the DOfit programme are transferable to other sectors and services and should provide solace and encouragement to those organisations seeking to support the health and wellbeing of their workforce.

Interventions that are designed and based on evidence and guidance, such as the DOfit programme, will only succeed if the complexity of the challenge to prevent and address overweight and obesity is acknowledged. In terms of the DOfit, and weight management interventions available to the general population, tailoring interventions to the target population, and the context and environment in which participants live their lives is everything. Learning from this work in Defence strengthens the need for a whole system approach. Organisational and societal benefits will only be achieved through individuals and leaders at all levels in the organisation being supported to change their mindset, whilst simultaneously investing in structural and environmental changes to ensure that the easiest option is the healthiest option.

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