This thesis has been submitted in fulfilment of the requirements for a postgraduate degree (e.g. PhD, MPhil, DClinPsychol) at the University of Edinburgh. Please note the following terms and conditions of use:

- This work is protected by copyright and other intellectual property rights, which are retained by the thesis author, unless otherwise stated.
- A copy can be downloaded for personal non-commercial research or study, without prior permission or charge.
- This thesis cannot be reproduced or quoted extensively from without first obtaining permission in writing from the author.
- The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the author.
- When referring to this work, full bibliographic details including the author, title, awarding institution and date of the thesis must be given.
Aut Inveniam Viam Aut Faciam:

Developing Performance Psychology for Norwegian Special Operation Forces

Christian Ytterbøl

Doctor of Philosophy

The University of Edinburgh

19. July 2023
Declaration

I declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where stated otherwise by reference or acknowledgement, the work presented is entirely my own.

Date: 19.07.2023

Signature:
Acknowledgements

First and foremost, thank you to the shooters. You have inspired me with your dedication, Ethics, work morale and willingness to learn!

Thank you to my supervisory team. Dave Collins & Alan MacPherson. It is difficult to describe this journey. It could not have been done without you!

Thank you to my children for always reminding me of the most important things in life. To my wife for supporting me with the ups and downs of this process.

Finally, this is also about closing a chapter for me personally. We did it brother! In remembrance. Christian Lian (06.04.1979 – 27.06.2010)
Abstract

Within the elite military spheres of the North Atlantic Treaty Organization (NATO), in particular Special Operation Forces (SOF), the last two decades with the Global War on Terror (GWOT) have exposed operators to a multitude of challenges. Some traditional but many novel. These have emerged both in training and on operations, but also through the effects of prolonged combat exposure and perhaps an overreaching in human capacities. As one of the consequences, performance psychology has grown as a field of interest in preparing operators to perform in their arena. Therefore, because of my own experiences in the last decades as a soldier, leader and combat veteran in conventional elite spheres, and later working with Olympians and world-class athletes, I have always been curious as to how performance psychology can be integrated and adapted to the special context of Combat Olympians, namely SOF. Following my investment and involvement as a coach, I wanted to go into depth and learn more about how performance psychology can be developed and integrated, especially in the Norwegian Special Forces (NORSOF). As a holistic addition to the high-level training already being conducted in these units. Concerning my title, “Aut Viam Inveniam Aut Faciam:” Developing Performance Psychology for NORSOF is translated to “find a way or make one”. This encapsulates the mindset of an operator. Both in the willingness to do what it takes to complete the mission and concerning the creativity and ingenuity within these units.

Given my own experience and subsequent ongoing education as a performance psychologist, I wanted to conduct “real world” investigations to understand more about how a bespoke performance psychology concept can be developed to fit the specific needs of an SOF operative. Consequently, a pragmatic humanistic approach was the natural choice as the aim was to understand more about the particular context and challenges these operators face instead of generalising and transferring knowledge to larger populations.
I conducted four studies in this thesis. In the first study, I analysed existing literature to identify critical aspects of psychology and MST in a military context. In the second study, I integrated MST, based on previous grounds into an advanced sniper course. In the third study, I investigated cognitive decision-making through an Applied Cognitive Task Analysis (ACTA). Moreover, in my fourth and final study, I explored the integration of a performance psychology package for NORSOF.

Results indicate that there needs to be more understanding of properly conducting performance psychology training if it focuses on working with the operators and for them. Furthermore, integrating mental skills training provides positive outcomes on the measurements used for both soldiers and instructors. Thirdly, my investigations indicate that integrating performance psychology can be essential in high-risk training, directly enhancing performance and the learning and decision-making process. Lastly, a performance psychology package integrated longitudinally and designed for testing these skills in a "real world" scenario showed positive consequences based on the results obtained, both for the teams and the individual operators. In sum, the thesis provides a novel and unique insight into the building blocks of a context-specific performance psychology program for NORSOF.
Lay Summary

The challenges for modern militaries and, more specifically, Special Operation Forces have been unprecedented in the last two decades. The main focus has been on fighting terrorism globally. In recent years, it is also clear that conventional war is again a part of the curriculum for these elites. To understand more about how a specific performance psychology package could be implemented and how this was experienced by the practitioners (operators), I wanted to understand more about how bespoke performance psychology focusing on the operator’s context could enhance performance. Research and practice in the field of elite sports show a clear causation between advanced mental aptitudes and high performance. In this specific military context, however, the potential for impact is still not researched to the extent it deserves. With the title meaning “find a way or make one”: Developing performance psychology for NORSOF. I sought to go into the practicalities of developing a context-specific, performance psychology program and measure the effects as experienced by the operators. Using a pragmatic humanistic approach, where the aim is to apply concepts and measure them in a “real world” setting, findings suggest that tailored performance psychology can improve performance and understanding of what creates optimum performance in extreme circumstances, both on the team and at an individual level.
Table of Contents

Declaration ........................................................................................................................................... ii
Acknowledgements ............................................................................................................................ iii
Abstract ................................................................................................................................................ iv
Lay Summary ....................................................................................................................................... vi
Table of Contents ............................................................................................................................. vii
List of Figures ....................................................................................................................................... xii
List of Tables ....................................................................................................................................... xii
List of Abbreviations .......................................................................................................................... xiv
Glossary of Terms ............................................................................................................................... xv
Peer review publications and other outputs emanating from this thesis ........................................... xvi

Chapter 1 – Introduction .................................................................................................................. 1
  1.1 Setting the scene ....................................................................................................................... 1
  1.2 The soldier’s context ................................................................................................................. 2
  1.3 Pressure in sports and pressure in combat ............................................................................. 4
  1.4 Limitations and delimitations ................................................................................................. 4
  1.5 Research aim and objectives ................................................................................................. 5
  1.6 Outlining the studies in this thesis ......................................................................................... 6

Chapter 2- Sharpening The Tip of The Spear .............................................................................. 8
  2.1. Introduction ............................................................................................................................. 8
  2.1.1 Overview ............................................................................................................................. 8
  2.1.2 The nature of the beast ....................................................................................................... 8
  2.2 What are Special Operation Forces (SOF), and what do they need? ............................... 12
    2.2.1 SOF leadership ............................................................................................................... 14
    2.2.2 Special, not elite .............................................................................................................. 15
    2.2.3 Performance enhancement as wellbeing ........................................................................ 16
  2.3 Important considerations when it comes to human performance development for Special
    Operation Forces ......................................................................................................................... 17
    2.3.1 Resilience emerging as a construct ................................................................................ 17
    2.3.2 Resilience training .......................................................................................................... 18
    2.3.3 Mental toughness and hardness ..................................................................................... 22
    2.3.4 Alternative approaches .................................................................................................... 24
    2.3.5 Case conceptualisation ................................................................................................... 25
    2.3.6 The biopsychosocial aspect ............................................................................................ 26
Chapter 3 - Methodology ................................................................. 36
  3.1 Introduction ............................................................................. 36
  3.2 Philosophical approach & ontological foundations ................. 36
  3.3 Methodological framework .................................................... 39
  3.4 Pro et contra ............................................................................ 40
  3.5 Applying these principles to each of the empirical chapters .... 45
  3.6 Consequential considerations ................................................ 46
    3.6.1 Trustworthiness ............................................................... 46
    3.6.2 Specifics of my research process ..................................... 48
    3.6.3 Generalisability ............................................................. 48
    3.6.4 Applied vs theoretical contributions ............................... 49
  3.7 Concluding remarks ............................................................... 49

Chapter 4 – Shooter Ready? Integrating Mental Skills Training for Snipers .... 50
  4.1 Introduction ............................................................................. 50
    4.1.2 Overview ......................................................................... 50
    4.1.3 Purpose of the investigation .......................................... 50
    4.1.4 Mental skills training ....................................................... 50
  4.2 Specific mental skills training for snipers ............................... 52
  4.3 The context of the advanced sniper course ............................ 54
    4.4 Methods .............................................................................. 55
      4.4.1 Research design ............................................................ 55
      4.4.2 Participants ................................................................. 57
      4.4.3 Mental skills training overview .................................... 58
      4.4.4 Mental skills training intervention ............................... 59
      4.4.5 Mental skill techniques and classroom lectures ............ 61
      4.4.6 Mental skills training in the field .................................. 62
  4.5 Data collection ........................................................................ 63
    4.5.1 Interviews with sniper candidates .................................. 63
    4.5.2 Interviews with instructors ............................................. 65
  4.6 Data analysis .......................................................................... 65
    4.6.1 Integrity, trustworthiness and rigour ............................... 66
  4.7 Results .................................................................................... 67
      4.7.1 Outcome scores on the sniper course ............................ 67
      4.7.2 Perceptions of sniper candidates .................................. 69
      4.7.3 Key theme: Experiences of the MST taught ................. 69
      Sub theme: Developed their own system ............................ 70
      Sub theme: Wide range of MST used ................................. 70
Chapter 5 - Commuting To Combat: Investigating Cognitive Demands in High Altitude High Opening (HAHO) Parachute Insertion For SOF

5.1 Introduction .............................................................................................................. 86
  5.1.1 Overview ............................................................................................................. 86
  5.1.2 Purpose of the investigation .............................................................................. 86
  5.1.3 Military parachuting .......................................................................................... 87
  5.1.4 Military parachute jumping as a research arena .................................................. 88
  5.1.5 Naturalistic decision making ............................................................................. 89

5.2 Methods .................................................................................................................... 91
  5.2.1 Research design .................................................................................................. 91
  5.2.3 Modified ACTA .................................................................................................. 92
  5.2.4 Participants ......................................................................................................... 93
  5.2.5 Phase 1 ................................................................................................................. 94

5.3 Data collection ......................................................................................................... 96
  5.3.1 Interviewing the operators ................................................................................ 96

5.4 Data analysis ............................................................................................................. 99
  5.4.1 Integrity, trustworthiness and rigor ..................................................................... 100
  5.4.2 Member reflections operators .......................................................................... 101
  5.4.3 Member reflections experts ............................................................................. 101

5.5 Results and discussion ............................................................................................ 102
  5.5.1 Results jump phase 1/Ground preparation ......................................................... 103
  5.5.2 Results jump phase 2/Loaded in the plane ......................................................... 105
  5.5.3 Results jump phase 3/In flight to HARP ............................................................ 108
  5.5.4 Results jump phase 4 & 5/Exit to canopy flight ............................................... 109
  5.5.5 Results jump phase 6/Flight-navigation-communication .................................... 110
  5.5.6 Results jump phase 7/Downwind- Base leg ....................................................... 112

Sub theme: Positive impacts on performance ............................................................... 71
4.7.4 Key theme: Performance under pressure ............................................................ 72
Sub theme: Approach to pressure changed ................................................................. 72
Sub theme: Developed procedures ................................................................................ 73
4.7.5 Perceptions of instructors .................................................................................... 74
4.7.6 Key theme: Difference in strategies from sniper candidates ................................ 74
Sub theme: Types of MST observed .............................................................................. 74
Sub theme: Learning and development of confidence ................................................ 75
Sub theme: Reflective skills .......................................................................................... 75
4.7.7 Key theme: Optimal versus sub-optimal performance ......................................... 76
Sub theme: Attentional control .................................................................................... 76
Sub theme: Cognitive overload .................................................................................... 76
Sub theme: Developing a combat mindset .................................................................... 77
4.7.8 Member reflections and 1 year follow up ............................................................ 77
4.7.9 Follow up with instructors .................................................................................. 79

4.8 Discussion ................................................................................................................ 80
  4.8.1 Limitations ......................................................................................................... 84

4.9 Summary and next steps ........................................................................................ 84
List of Figures

Chapter 4
Figure 4.1 ...............................................................................................................................56
Figure 4.2 ...............................................................................................................................60
Figure 4.3 ...............................................................................................................................68

Chapter 5
Figure 5.1 ...............................................................................................................................97
Figure 5.2 ..............................................................................................................................123

Chapter 6
Figure 6.1 .............................................................................................................................128

Chapter 7
Figure 7.1 .............................................................................................................................181

List of Tables

Chapter 3
Table 3.1 ..............................................................................................................................44

Chapter 4
Table 4.1 ...............................................................................................................................61
Table 4.2 ...............................................................................................................................62
Table 4.3 ...............................................................................................................................69
Table 4.4 ...............................................................................................................................74

Chapter 5
Table 5.1 ...............................................................................................................................98
Table 5.2 ..............................................................................................................................104
Table 5.3 ..............................................................................................................................108
Table 5.4 ..............................................................................................................................110
Table 5.5 ..............................................................................................................................112
Table 5.6 ..............................................................................................................................115
Table 5.7 ..............................................................................................................................117
Table 5.8 ..............................................................................................................................119
Table 5.9 ..............................................................................................................................121
Chapter 6

Table 6.1 ...........................................................................................................................................132
Table 6.2 ...........................................................................................................................................135
Table 6.3 ...........................................................................................................................................143
Table 6.4 ...........................................................................................................................................155
# List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full term</th>
</tr>
</thead>
<tbody>
<tr>
<td>NATO</td>
<td>North Atlantic Treaty Organisation</td>
</tr>
<tr>
<td>NAF</td>
<td>Norwegian Armed Forces</td>
</tr>
<tr>
<td>GPF</td>
<td>General Purpose Forces</td>
</tr>
<tr>
<td>NORSOF</td>
<td>Norwegian Special Operations Forces</td>
</tr>
<tr>
<td>SOF</td>
<td>Special Operation Forces</td>
</tr>
<tr>
<td>NDM</td>
<td>Naturalistic Decision Making</td>
</tr>
<tr>
<td>RPD</td>
<td>Recognition Primed Decision Making</td>
</tr>
<tr>
<td>HAHO</td>
<td>High Altitude High Opening</td>
</tr>
<tr>
<td>HALO</td>
<td>High Altitude Low Opening</td>
</tr>
<tr>
<td>MFF</td>
<td>Military freefall</td>
</tr>
<tr>
<td>HARP</td>
<td>High Altitude Release Point</td>
</tr>
<tr>
<td>ACTA</td>
<td>Applied Cognitive Task Analysis</td>
</tr>
<tr>
<td>TD</td>
<td>Task Diagram</td>
</tr>
<tr>
<td>KA</td>
<td>Knowledge Audit</td>
</tr>
<tr>
<td>SI</td>
<td>Simulation Interview</td>
</tr>
<tr>
<td>CDT</td>
<td>Cognitive Demands Table</td>
</tr>
<tr>
<td>SC</td>
<td>Sniper Candidate</td>
</tr>
</tbody>
</table>
Glossary of Terms

Naturalistic Decision Making
A framework developed from studying decisions in the wild, for example, how fire ground commanders make cognitive complex decision making under time pressure (Klein, 2015)

Resilience
With a multitude of approaches there is no agreement of a definition, but the most common is the ability to bounce back from adversity (Southwick et al., 2014).

Biopsychosocial
An explanation for complex interactions combining biological, psychological and social factors (Blascovich et al., 2004)

Experiential learning
Learning is a process moving from abstract concepts that can be applied in a wide range of situations to be able to grasping and transforming an experience (Kolb, 2015)

Self-efficacy Theory (SET) – A comprehensive concept where an individual (or team) belief in his/her ability to reach certain goals (Bandura, 1997)

Pracademic – Operating as both a practitioner and researcher with a focus of developing current practice (Posner, 2009)

Case Conceptualisation – The combination of needs analysis, issue conceptualisation and case formulation in order to assess and plan effective interventions (Martindale, 2023)

Pet concept - Concepts that are uncritically applied in research due to personal beliefs are often referred to as "confirmation bias" or "biased interpretation." Confirmation bias occurs when researchers or individuals selectively interpret or favor information that supports their preexisting beliefs or hypotheses while disregarding contradictory evidence. This bias can
lead to skewed interpretations and the potential for drawing incorrect or incomplete conclusions in research (Nickerson, 1998)

**Operator/Special Operator**- These two definitions are used side by side, following the previous literature. Usually, an operator refers to a conventional elite unit and a special operator refers to Special Operation Forces.

**Peer review publications and other outputs emanating from this thesis**


**Articles published in Stratagem (www.strategem.no)**

https://www.strategem.no/hva-er-mental-styrke/ [What is mental strength in a military context]

https://www.strategem.no/realistisk-trening-og-mental-styrke/ [Realistic training and mental strength in a military context]
Presentations, lectures and other ongoing projects

I presented my PhD project in a key-note speech as a part of a human performance optimisation seminar 15. June 2023. I was invited in conjunction with the start of a new section in the Norwegian Army dedicated to human performance optimisation [Fagseminar, menneskelig yteevne i landmilitære operasjoner]

Since 14.09 2022, I am the Norwegian representative in the NATO group on Cognitive performance and instrumentation (ICE-PPR HPWG Cognitive Performance and Instrumentation Sub WG)

My research is embedded in a larger project at the Norwegian Defence Research Establishment (FFI), in project 1653 Human Enhancement, approved F3-2022/2 [Forbedring av menneskelige egenskaper med fokus på soldatens yteevne] (https://www.ffi.no/en)
Chapter 1 – Introduction

1.1 Setting the scene

This project came to be an unintended result of my military career. As I was preparing to deploy with my sniper team to Afghanistan in 2006, one of my best friends was injured in a firefight. As he returned home and recovered, he made the trip to see me in the location where I finished up our training before deploying a couple of weeks later. He told me about his experiences of being in combat. The sights. The smells. How he experienced getting shot at and taking an enemy's life. Hearing impairment. Tunnel vision. The palpable anxiety of the soldiers there who did not have the same selection and training. But also the feeling of accomplishment. Laser-like focus. That he did his job. That his team did the job. He experienced that everything from the neck down was automatic, and his training with his unit equipped him with the ability to make sound tactical judgements in extreme situations. We spent hours talking about this and decided to learn more, and in the future, we will be able to implement our experiences to enhance our training. After my deployment, my second in Afghanistan and fourth so far, I was able to join the same unit. From 2007 to the next four years, we had one team deployed, one in preparation to be deployed and one returning home. In addition, we ran selection and training. During this period, we saw multiple combat engagements on every single tour. My primary job was to integrate these lessons into our training, often called the three-legged stool; The physical, tactical, and mental aspects. In 2009, I was deployed as a team leader for a Military Observer Team in Northern Afghanistan. I experienced emotions shifting from pure joy to utter helplessness in seconds. I was humbled in a way that is hard to describe. At the same time, I participated in a fellowship—a brotherhood. Despite how I felt about the overall mission, I had the privilege of leading a group of operators in combat.

Moreover, parts of it were the best time of my life. My unit lost four operators in the spring of 2010, and many more were injured. When I left my operational career, I had been
deployed on six tours, primarily as a team leader. Subsequently, I transitioned to the educational side of the military, and I have become increasingly interested in the psychology of performance and especially the lack of bespoke performance psychology for elite units and SOF in particular. Following my civilian education, I have also worked with Olympians and top-level athletes in various sports. In sum, this inspired me to learn more about the similarities and differences between Olympians and *Combat* Olympians.

Additionally, I would contend that there is a lack of knowledge and understanding in parts of academia. The lack of knowledge within parts of the Norwegian Armed Forces has also been perceptible, notably from both psychologists and psychiatrists clinging to meaningless statements that performance psychology (in a military context) is just training people so they can kill more efficiently. In sum, these experiences have convinced me of the importance of continuing this work to try and tease apart entrenched views, which perhaps have resulted in a stalemate with elements within the military and the scientific communities. Specifically, these two groups seem intent on maintaining their hegemonic position while seeking to retain control of the questions and methodologies posed— with all this encompasses.

### 1.2 The soldier’s context

Whether war is a part of human nature is complex and multifaceted, with different scholars presenting opposing views (e.g., Keegan, 1994; Pinker, 2012). From the soldier’s perspective, what scholars think about the subject does not really matter. Neither what reason politicians present. Because you are ordered to go where you are needed based on the respective nation's interest. Nevertheless, in the famous book *on killing* (Grossman, 2009), the author claims that humans have an innate opposition to killing other humans and largely credits Lord Marshall’s (1947) research from the Second World War for this hypothesis (Marshall, 2000). Furthermore, in his book *Men Against Fire*, using retrospective interviews, Marshall
claimed that as many as 85% of soldiers did not fire their weapons at their enemy. The explanation proffered proposed that there is a biological block against killing another human being (Marshall, 2000). However, with Grossman’s (1995) book being the only one of its kind, this hypothesis's traction is enormous (Grossman, 2009).

One consequence is that this has become the standing narrative. Anecdotally, especially for outsiders, that killing the enemy in combat must be difficult. However, there is a gap between how civilian society and soldiers perceive this act. Recent research brings a more nuanced perspective to this issue. Bae and Ben-Ari (2005) studied Israeli snipers and conducted a qualitative study that focused on the lived experiences of 30 snipers following the Al Aqsa Intifada (October 2000). They discovered strong contradictory feelings which co-exist (e.g., the joy of killing an enemy and the sadness of taking a life). However, at the moment, when snipers are doing their jobs, their only focus is on the skill required to execute a well-placed shot several hundred meters away: Only in “their dreams and thoughts the people they have killed and injured appear” (Bar & Ben-Ari, 2005, p. 141).

Suppose it is believed that humans have an innate opposition to killing another human being (in combat). In that case, it might be that methods like dehumanising and degrading the enemy can sneak into training to overcome this presumed innate resistance to kill. In a democracy – where the country is beholden to uphold international law under the Geneva Convention, where the populace consents to go to war – and the act of war is viewed as unavoidable and just - it may be the case that the act of killing is not necessarily going to inflict moral injury on combatants (Molendijk, 2021). Instead, the hazard posed to combatants post-conflict is living with the effects of poor execution and/or decision-making. Realistically, under these terms of engagement, if any combat soldier fails to kill the enemy, they are not doing their job – and, at a macro level, defending the values and culture they are mandated to serve.
1.3 Pressure in sports and pressure in combat

There has been an increased focus on interdisciplinary cooperation between the fields of performance development, both in the military and the world of sports. However, we must still connect these fields to better effect (DeWiggins et al., 2010). Concerning performance under extreme pressure, it is essential to understand the similarities and differences between sports and combat. As an example, this personal account provides insight into performance as an operator: “While I was firing, a bullet went straight through my helmet… I ducked… When I went back up, another bullet hit my pistol grip…” (Waaler, 2019, p. 16). This environment, where the operator fights for their life, differs significantly from the athletic performance environment. At the same time, an athlete going into the octagon to fight in a mixed martial arts competition will probably experience much stress, possibly even some similar emotional experiences to those of a soldier. As such, military and athletic training processes of performing in stressful conditions probably share some common factors, especially regarding preparation and training. However, performing in an operator’s context is unique and extreme and warrants specific research.

To summarise the overarching rationale for the thesis, there are several issues concerning the development and integration of psychological constructs in training and preparing operators and soldiers alike. These issues include understanding their specific context and culture. Furthermore, it moves beyond sports psychology and clinical psychology to utilising performance psychological methods to try and understand their challenges and what can be done to assist them in preparing for combat operations.

1.4 Limitations and delimitations

Following the above implications, it is important to consider the limitations of this thesis. For the sake of expediency, my training, and my service record, the following investigations have been undertaken within Norwegian Armed Forces (NAF). All respondents are
male, and everyone was at the time of the investigation service members. Therefore, in addition to the standard ethics procedure, special considerations apply because of the sensitivity involving these units. Local permission was obtained from NAF (appendix A.3). Furthermore, certain delimitations exist through the decisions I have made. The investigations are deliberately limited to NORSOF.

1.5 Research aim and objectives

Through my thesis I sought to establish and present a baseline for the application of bespoke performance psychology in elite military environments. Consequently, my aim for this thesis was:

To develop the foundation for a bespoke performance psychology package for Norwegian Special Operation Forces.

This aim was examined through several objectives:

1) Exploring the specific and, importantly, unique challenges encountered when researching and consulting with Special Operation Forces (SOF).

2) An overview of the current state of knowledge on these ‘Combat Olympians’. Highlighting key differences between SOF and conventional forces, then look to provide a critique of the approaches used by practitioners to date.

3) Perspectives on where opportunities might have been missed and offer some suggestions for more impactful (and accurate) research and practice.

4) Examining the efficacy of a bespoke MST programme, based on pre-existing grounds, with domain-specific adjustments in an advanced sniper course. Investigating the participants' perceptions of useful programme elements.

5) Investigating the use of ACTA as a way of understanding context-specific demands of a complex task for SOF: High Altitude High Opening (HAHO) parachute jumping,
and consequently identifying possible training applications using performance psychology.

6) Investigating the impacts from foundational SOF selection, training & culture for the bespoke design of performance psychology.

7) To pilot test the program described, seeking process and outcome divided into three brackets: before, during and after a mission, seeking the operators’ perspectives on the program impact.

1.6 Outlining the studies in this thesis

In Chapter 2, I investigated the domain of performance psychology for the military in general and SOF in particular. In addition, I looked at what currently needs to be added to research and suggested several possible approaches to close this gap.

In Chapter 4, I looked at implementing a performance psychology package utilising Mental Skills Training (MST) based on pre-existing scientific literature in an exploratory case study of an advanced sniper course and developing a context-specific approach based on gaps in the literature. This investigation assisted me in understanding the perceived impact of the effects on MST in a demanding and stressful context and assisted me in planning my subsequent study.

Moving from one performance arena to another extreme, namely military freefall (MFF) and High-Altitude High Opening (HAHO) parachute insertion, in Chapter 5, I utilised a context-specific and developed version of Applied Cognitive Task Analysis (ACTA) (Millettelo & Hutton, 1998), to understand the cognitive demands in this advanced insertion method. Dividing the task into distinct phases made it possible to explore the challenges and strategies in moving from a novice level to an expert level (Dreyfus et al., 1986). Moving for-
ward, as Chapters 4 and 5 mainly focused on training applications, however demanding, a vital aspect of my research was understanding how the effects of a holistic, bespoke performance psychology program were experienced during training and preparation – utilising post-hoc reflections, too.

Therefore, in Chapter 6, through a longitudinal explorative case study, I could test applications for the 'whole game' whilst functioning as an embedded performance psychologist. In addition, I conducted a follow-up to further understand the operators' experiences. In sum, my research aimed to create a deeper insight and understanding, important both in an ethical context and morally. Developing the foundation for a bespoke performance psychology package with the philosophy that it should be done with and for them, not on them (Collins & Kamin, 2012).
Chapter 2- Sharpening The Tip of The Spear

2.1. Introduction

2.1.1 Overview

As performance psychology expands to address different environments, military settings are viewed as a natural extension. In certain cases, though, I suggest that a sub-optimum approach has been employed. A lack of specific knowledge of military culture and context coupled with a diminished emphasis on conducting psychological research for military performance has resulted.

The objectives of this investigation were:

1. Exploring the specific and importantly unique challenges encountered when researching and consulting with Special Operation Forces (SOF).
2. An overview of the current state of knowledge on these ‘Combat Olympians’. Highlighting key differences between SOF and conventional forces, then look to provide a critique of the approaches used by practitioners to date.
3. Perspectives on where opportunities might have been missed and offer some suggestions for more impactful (and accurate) research and practice.

2.1.2 The nature of the beast

For the last 20 years, many (NATO) member countries have been involved in wars in Afghanistan and Iraq; campaigns which have resulted in an exponential leap in combat experience. Indeed, for many NATO countries, this was the first time since World War 2 that both conventional forces (GPF) and SOF conducted full-scale combat operations in tandem. Without question, the NATO allies were offered some hard and important lessons for both military and civilian personnel to reflect upon. Regarding the war in Ukraine, conventional war is not something that belongs solely to another era.
For NATO members, the mantra of continually seeking to improve its personnel is a long-held consideration. Recently, this has led to the import and application of bodies of academic and practical knowledge sourced from pertinent performance domains, most notably sport. For example, in 2005 the Ranger Athlete Warrior program commenced. The purpose of this program was to focus on the physical and mental development of the individual Ranger (United States Army, 2014). In parallel, related programs with differing labels and descriptions began to emerge from militaries around the world. Highlighting how soldiering has evolved: terms such as ‘soldier athletes’ and ‘tactical athletes’ are now used widely, without, I would argue, addressing the specificity that each subgroup of military possesses. Clearly, optimum service and research must cater for such inexactitudes.

Throughout my thesis, these are referred to as *Combat Olympians* as I believe these two words combine to present a clear mental image of what the SOF (Special Operation Forces) job encompasses. First and foremost, warriors, however with the approach to performance development as an Olympic athlete. In other words, the military service’s Olympians. This terminology is important as it clearly indicates the similarities and differences that practitioners and researchers should be aware of when working with SOF as contrasted with GPF. Importantly, psychologists looking to apply concepts developed in the sporting arena need to be aware of the extremes of client and context that are involved. From my experience and perspective, it might be relevant for practitioners about to commence work in this field to develop greater contextual awareness. For example, most research conducted in military settings does not distinguish between differences in tactical military personnel (Raabe et al., 2021): in other words, the special characteristics that apply to SOF go largely unnoticed. This leads to the essential questions regarding SOF; namely, what is performance in this context and how to go about improving it?
This contention is not without precedent as papers addressing the ‘special natures’ of specific populations have already been produced in domains such as music (Pecen et al., 2016) and dance (Henley, 2016). In addition, as I will suggest in this chapter, some methods have been either incorrectly applied or assumptions have been made that potentially limit the efficacy of the interventions proposed.

Indeed, the increased focus on both physical and mental performance within tactical populations (e.g., police, military and firefighters) has created a more open forum for the implementation and delivery of psychological services. Such is the demand that, already in 2012 there were more mental performance consultants working in the US. Army than in any other performance domain (Raabe et al., 2021). The military was and continues to be a major growth area for performance psychologists. Consequently, it is timely and important to evaluate current thinking and practice to engender critical debate and consider emerging avenues of enquiry.

Notably, however, peer-reviewed publications relating to psychology and tactical populations (i.e., emergency services and military) are sparse. In a recent systematic review only 49 articles out of 7220 potentially relevant publications met the inclusion criteria and specifically addressed tactical populations (Raabe et al., 2021). In this paper, the military population is regarded as one group, and research on SOF is not mentioned. There are probably several reasons for this, one being that it is still a new field of work; secondly that the focus is on “doing the work” and not conducting research as a part of it; and thirdly these operational units work under strict security measures to ensure mission success. Lastly, and perhaps the most problematic issue from my perspective is that US, Governmental contracts are put out to tender, where their focus is to deliver day-to-day training – not research. In comparison to consultancy, research is expensive and time-consuming. It takes time to design, refine, evaluate and validate protocols. I would argue, however, that this is an essential step to developing
a performance-oriented psychology program fit for SOF. Not doing so hinders the development of research-based performance psychology interventions and prevents the dissemination of empirical data. The need for SOF theory underpinned by high-quality research is clearly stated and understood (Joint Special Operations University (U.S.) et al., 2015) yet, with the SOF community as its primary focus, the field of human performance psychology requires further development.

Whilst the introduction of performance psychology orientated initiatives to the military in general, with its attendant ‘knowledges’ and associated practices, has been largely beneficial (Rodden-Aubut & Tracey, 2021), it has not considered the roles and functions that subgroups of the military perform. For the SOF community, the import and delivery of a generic curriculum based around sport psychology and delivering it ‘off the shelf’ is a significant concern. As SOF and elite conventional units continue to develop their training regimes, I propose that opportunities to further enhance capability can be realised with the judicious application of human performance psychology (Raabe et al., 2021) in a holistic manner (Kelly et al., 2013), as opposed to a generic ‘one type fits all approach’.

Consequently, in this chapter I first provide a brief overview of the current state of knowledge on these ‘Combat Olympians’ with reference to two key factors: firstly, the term ‘special’ and what that entails. Secondly, I explore and characterise the term ‘performance’ in the domain of SOF. Building upon these distinctions, I move on to provide a critique of the approaches used to date, especially as this holds implications for practitioner enquiry. Finally, I offer perspective as to where opportunities may have been overlooked. I started by taking an explicit look at the labels and nomenclature currently employed in this exacting field.
2.2 What are Special Operation Forces (SOF), and what do they need?

As performance psychology expands its remit, the special operator has become a focus of attention. The expansion of knowledge and practise into this sphere of operation from sport psychology is, to an extent, a natural extension; especially given the way the elite military operators train - utilising a similar mindset, methods and approaches to elite athletes (Herzog & Deuster, 2014). Notably, however, I would argue that this premise has led to the uncritical import of certain psychological and sport psychology-based techniques. I contend that in the current landscape and based on resent research (Rodden-Aubut & Tracey, 2021), mental skills methods are often mixed with somewhat unclear causality and a very broad scope of goals. Indeed, research shows that it is largely a focus on decreasing “psychosocial aspects (i.e., anxiety or depression)” (Rodden-Aubut & Tracey, 2021, p. 9). With this increased interest and uptake, both benefits and risks are likely – and my focus, specifically where the nuances and differences associated with SOF training and operations are not fully considered (Raabe et al., 2021). Consequently, when it comes to developing and achieving performance, I begin with an introduction that describes both the difference and some of the overlaps between SOF and conventional elite units:

SOF is comprised of operators who undergo rigorous selection and highly advanced training, with equipment tailored to the task at hand. Special operations were succinctly defined as follows: “Special Operations encompass the use of small units in direct or indirect military actions focused on strategic or operational objectives. These actions require units with combinations of specialised personnel, equipment, and tactics that exceed the routine capabilities of conventional military forces” (Joint Special Operations University (U.S.) et al., 2015, p. 1). Therefore, SOF can be deployed across the spectrum of military operations, often with very little notice given and, at times, little specific preparation. As such, they are ‘specialist generalists’; retained in high demand by policy makers and with significant value
placed upon what can be described as their adaptive expertise (Mees et al., 2020). Three broad categories encapsulate Special Forces’ principal tasks: Military Assistance (MA), Special Reconnaissance (SR), and Direct Action (DA); these mission sets are common to all NATO member states (Moon, 2018).

Searle (2017) suggests that special operations are tasks that are beyond the remit of operations undertaken by the regular military. The term “operations,” as used here, is defined broadly to include actions, activities, tasks, and missions. However, I would take issue with this conceptualisation: rather, I posit that conventional forces and SOF are best thought of as distinct, but with a degree of overlap. Conventional operations are considered ‘inside the box’ (Searle, 2017, p. 7), but this does not accurately reflect the nature of recent military campaigns such as the global war on terror (GWOT), which demonstrates that Counter Insurgency operations (COIN), and some forms of Military Assistance (MA) can be executed by conventional forces. Notably, however, SOF also go well beyond the in/out the box dichotomy (Searle, 2017).

A concern for SOF is the so-called hyper conventionalisation; for example, an over-emphasis placed upon Direct Action (DA) raids instead of focusing the same amount of effort on Unconventional Warfare (UW), (Rothstein, 2006). For example, the increase in the conventional forces’ capability is recently exemplified by the United Kingdom’s establishment of a Ranger regiment, developed to fill some of the mission sets previously conducted by SOF (UK Army, 2021). In the United States, the establishment of Security Force Assistance Brigades (SFAB), follows the same rationale (US Army, 2022). Even with these expansions, however, conventional forces and SOF remain distinct, with fundamental differences encompassing their recruitment, selection, training, culture, status and organisational structures, respectively.
2.2.1 SOF leadership

For example, UK SOF leadership and organisational structure does not mirror the regular military. Officers commonly spend a comparatively short period of time with SOF, whereas enlisted ‘troopers’, dependent on their performance, can be with the squadron for up to twenty years. This has significant implications for how missions are conceived, planned, led, and reviewed. Membership of the troop is based upon expertise which may or may not be required to come to the fore at any given point during the lifecycle of an operation. Therefore, to operate effectively, there will be occasions when officers must follow experts of lower rank. In parallel, SOF operators must be comfortable leading where the context matches their expertise.

Therefore, the organisational culture of SOF has implications for the leadership theories developed and employed by psychologists, which can potentially advance group performance. Transformational Leadership (TL) has been extensively researched in the context of regular military (Bass et al., 2003). TL posits that group performance can be linked to leaders who are high in dominance, self-confidence, have a need to influence, are able to articulate their goals and vision, are perceived well, and have high expectations of their subordinates (House & Howell, 1992). Indeed, an extensive study investigating U.S. military personnel on exercise, conducted by Bass et al., found that platoon potency was positively correlated to TL. However, while the findings and methodologies are not being disputed – I question the extension of this theory where it applied to SOF. TL implies followership and tacitly operates on the assumption that, in most situations, the leader of the group is expected to provide the answer to the tactical question posed. Therefore, this form of leadership theory and the culture it engenders runs counter to the ethos and organisational structure of SOF. In short, the SOF leader must be both adaptable and empowering because the operators they serve alongside need to trust their own initiative in hyper-dynamic environments. Consequently, psychologists
aspiring to work in this environment must have an appreciation of the group dynamics of SOF – then find theories that could potentially inform the design of a suitable intervention – if one is required.

2.2.2 Special, not elite

For the sake of clarity, it is also important to distinguish between elite and special forces. Searle et al (2017) explain this in a straightforward way; for example, an elite unit is very good at what they do. Hence, they are ‘elite’; but they are not necessarily special. ‘Special’, on the other hand, implies different, rather than merely ‘better’ (Searle, 2017, p. 11). Importantly, however, against the plethora of personal accounts in books, and in the media in general, it is often very difficult for outsiders to understand the different levels conventional forces and SOF work on. This is compounded by differences in countries’ military cultures. Consequently, care must be taken when applying research formulated in starkly different environments and applied to SOF without due consideration given to their expertise and the operational demands placed upon them. Therefore, psychologists working in this operational sphere need to have the necessary cultural skill set to develop methods and approaches that can be justified and monitored against a very different set of performance challenges. Another important factor to bear in mind is the distinction between special and specialised. A SOF unit is not necessarily more specialised than a conventional unit (Searle, 2017). A conventional elite unit can be highly specialised and have a very limited mission set in their portfolio. For example, the British Pathfinders of the 16 Air Assault Brigade can conduct advanced airborne insertion techniques, work in small teams behind enemy lines and conduct offensive operations (UK Army, 2018). Undoubtedly, this is a specialised conventional elite unit, but not SOF. A further example is US Marines Force Recon battalions that are highly trained and undergo a rigorous selection process but are not SOF since they form part of the United States Marine Corps (Skovlund, 2021). Many similar units are scattered across NATO and should be
defined as conventional elite units, with very high skillsets, enhanced capabilities and access to specialised equipment, but under the umbrella of conventional command. Given that I have established SOF has an entirely different approach than conventional armed forces, due to their selection, mission sets and command structure, I would suggest another approach to the job. I would contend that you cannot research or conduct applied work with conventional forces and then take the same approach and transfer it to SOF. It would be like doing applied work with soccer players, but then trying to do the same interventions with American football. There are superficial similarities but, after that, the training we provide must surely be bespoke.

2.2.3 Performance enhancement as wellbeing

This leads me to the second distinction namely the essential need for a focus on performance – not just mental health. Clearly a significant development has occurred, not only in sports but also in our society, regarding the way we treat mental health and welfare, and the military is no different. Focusing on mental health and welfare and making sure people are ‘OK’, and not negatively impacted by their occupation, is of course an important factor. Yet, it is no more or less important for SOF than it is for conventional forces. On certain occasions it is likely that SOF operators will be under a great deal of pressure. Nevertheless, and against the increased risks inherent in their role, one of the most important ‘mental health’ factors we might be overlooking is their performance. Currently, according to my experience as a researcher and performance psychologist in training working in this field, there is an imbalance in the number of mental health experts working with SOF, versus the number of performance psychologists. Anecdotally, my experience is that it is easier for SOF operatives to consult a mental health clinician than it is to access psychology for performance.
As important as fostering mental health is, I would contend that the acquisition of a judiciously tailored performance psychology training for SOF is also an important prophylactic necessary to engender mental health. For example, assuaging chronic worry and anxiety by using mental skills to plan more effectively enables operators to develop and refine their capacity to work in a pressured, expertise-led, high-performance environment, while undertaking complex decisions and tasks (Klein, 2015), individually and collectively. Therefore, it is my contention that SOF operatives require at least as much (if not more) performance psychology as clinical mental health support, especially when the performance approach is holistic (Kelly et al., 2013), meaning that the development of the whole person is imperative, not restricted to the operator’s performance domains (Miller & Kerr, 2002). In short, one’s mental health is likely to be bolstered by increased confidence in the skillset of the individual operator and the team.

2.3 Important considerations when it comes to human performance development for Special Operation Forces

2.3.1 Resilience emerging as a construct

Currently, there are several approaches to mental preparation and performance development within the NATO alliance (Rodden-Aubut & Tracey, 2021). The concept of resilience is widely popular and a topic of widespread debate. Resilience is often referred to as the ability to bounce back from adversity. The American Psychological Association (2014) defines resilience as “the process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress (para. 4)” (Southwick et al., 2014). Resilience has come about because of work carried out in the school of positive psychology (Seligman, 2019). It is predicated upon the ability to cope adaptively, having personal control, hardiness and available social support. The possession and the ability to employ allied strategies successfully are proposed to result in higher resilience, leading to decreased mental symptoms and enabling
career and personal success. Therefore, the onus is implicitly placed on the individual to address the psychological consequences of their military deployments. One of the most contentious assumptions concerning resilience is that it is regarded by positive psychologists as a stand-alone virtue divorced from context and based on the assumption that it can be applied in all circumstances (Friedman & Robbins, 2012).

2.3.2 Resilience training

Despite the above and other criticisms, the military promotion and training of resilience is widespread, although perhaps based on an erroneous or overly specific logic. For example, resilience training was initially mandated by the U.S. Government in response to increased levels of suicide among military personnel (Simmons & Yoder, 2013). One of the first significant programs involving resilience in the military was the introduction of the U.S. Army Master Resilience Trainer (MRT) course: a 10-day program of study that teaches resilience skills to non-commissioned officers (NCOs), (Reivich et al., 2011). Based on positive psychology (Cornum et al., 2011), the U.S. Army's MRT Course is designed to enable soldiers to increase their resilience, and latterly MRT became a constituent component of the Comprehensive Soldier Fitness Program (CSF) (Reivich et al., 2011). At the inception of this program, several concerns were voiced, most notably from the Coalition for an Ethical Psychology (Eidelson & Soldz, 2012):

In our detailed review, we examine (1) the failure to measure the important outcomes of PTSD, depression, or other psychological disorders despite the availability of validated measures for doing so, (2) the flawed research design that fails to control for important confounding variables, (3) significant problems with the method of data analysis, (4) the failure to acknowledge plausible risks of the CSF intervention (Eidelson & Soldz, 2012, para. 2)
Notwithstanding these concerns, the MRT course has continued and most likely evolved (hopefully in a positive direction) based on feedback and other developments. However, based on the literature, there are issues with MRT from its inception and foundational concept, I believe it is crucial to understand the whole picture when considering different methods derived from this training. Especially, since it is a massive program launched without any pilot testing (Eidelson et al., 2011).

Despite the popularity of resilience, however, essential theoretical differences of opinion regarding resilience remain unresolved. Consequently, I suggest that resilience can be misconstrued as an essential mental skill when, in fact, there may be circumstances where the approach might be counterproductive. Perhaps especially after deployments or combat engagements, where the iatrogenic consequence of resilience could be that one is not resilient enough; therefore, one is experiencing difficulties, adding to the stigma of mental health issues (Sherman, 2015).

As well as construct issues, there are implications of an overreliance on this well-publicised approach. While there is undoubted evidence that resilience bears upon an individual’s motivational set - in trying circumstances (Reivich et al., 2011), it is a severe and flawed assumption to mistakenly assume that performance psychology has been wholly addressed in the context of SOF (and the military in general) if this one factor (resilience) is applied wholesale. Despite these challenges, however, the potency of resilience remains undiminished. For example, following the trend, the U.K. Army has developed a mental resilience program (MRP), stating that it develops the moral component at a low cost (Precious & Lindsay, 2019). There appears to be a serious need for authors to counter the criticisms in a reasonable and reasoned fashion (see, for example, Anālayo, 2021 on mindfulness) rather than persisting with an uncritical promotion, especially in this specialist field.
Furthermore, and concerningly, especially in the inherently high-stakes setting of SOF, one of the attractive features of deploying resilience in military settings is its cost-effectiveness and the latitude this gives policymakers to pursue their foreign policy objectives. This has led to several allies employing it as part of their conventional mental health and toughness programs. This is evidentially challenged. For example, an evaluation of the Canadian Armed Forces' Road to Mental Resilience Program (R2MR) (Fikretoglu et al., 2019) resulted in contraindicatory empirical evidence. It stated that the data presented;

A very complex picture in which it is made evident that sensible, evidence-informed workplace mental health interventions such as R2MR may work under high fidelity conditions but may yield no discernible benefit or even inadvertent iatrogenic effects if implemented poorly or without sufficient consideration to the larger organisational context (Fikretoglu et al., 2019, p. 12).

Indeed, despite evidence supporting resilience emanating initially from the Penn Resiliency program (2012), there is also a peer-reviewed meta-analysis that concluded that the PRP program had individual effects for symptoms as long as 12 months post-intervention but "small average effects" (Brunwasser et al., 2009, p. 1052). Based on this mixed picture, I would suggest that the seemingly uncritical transfer from PRP and following application to military populations, never mind SOF operators, requires careful consideration. Furthermore, there are no peer-reviewed evaluations of the program, except evaluations from CFS personnel, where their findings supported the effectiveness of the resilience program (Lester et al., 2011). According to Steenkamp et al. (2013), the published results from the CSF program do not support its conclusions when examining results in the report from the Global Assessment Tool (GAT), with a particular focus on significance tests (Steenkamp et al., 2013). The Global Assessment Tool (GAT) is an online psychometric assessment tool that has over a million users annually and has been shown to discriminate between high and low-performing soldiers with
a standard deviation of .33 between the respective categories across a range of psychosocial factors, including relevance resilience. Clearly, psychometric scales of this kind are impressive accomplishments for those concerned. However, determining who is fit to be deployed and a skilled operative in terms of their psychometric presentation is manifestly different from assembling a bespoke psychological skills package for combat performance and survival. Arguably, this could indicate that the effect of resilience training in CSF is less than program claims based on the quantitative results. There are several other ways of measuring resilience; for example, the Connor-Davidson Resilience Scale (Connor & Davidson, 2003), the Deployment Risk and Resilience Inventory 2 (Vogt et al., 2013) and the PCL-M, the Post-traumatic Stress Checklist (Blevins et al., 2015). Notably, all these psychometric scales have been published in peer-reviewed journals and are considered robust measurement tools by their proponents (and presumably journal editors). However, there has been criticism emanating from some who have argued that, at least in military applications, there is an over-reliance on a single mode of measurement (Friedman & Robbins, 2012), meaning that soldiers' and SOF operators' experiences and reflections over the lifecycle of deployment remain underexplored. Reflecting this and earlier criticisms, a recent study highlights that, whilst combat exposure is more common amongst SOF, there are similar or lower levels of mental health issues (Dretsch et al., 2020) than with conventional forces. My issue is that attributing this to a single, perhaps multifaceted construct is likely flawed, as is often argued with parallel constructs such as mental toughness (Caddick & Ryall, 2012; Perry et al., 2021). Indeed, this single-mode reliance could arguably remove some of the flexibility needed in developing behavioural skills prevalent in a more comprehensive military context, such as applying learning from one's own experiences and adapting learning from peers (Savage et al., 2021).

On the other hand, the empirical knowledge gained from this program could inform NATO psychologists of current best practices regarding the mental health dimension. I know
from research conducted in partnership with elite athletes that different performers employ psychological tools, choosing only those that resonate and convey to them specific, individual meaning. SOF operators are likely similar in this regard. Therefore, GAT can tell who holds positive and negative psychosocial perspectives and that these scores are likely correlated to their skill as a soldier. Crucially, however, it does not guide practitioners in maximising their clients' psychological performance.

2.3.3 Mental toughness and hardiness

Mental toughness (MT) is, at first glance, another compelling construct that fits neatly into both elite-ness and the 'special' category. According to Clough and Strycharczyk (2015), MT is based on the 4Cs: confidence, commitment, challenge and control. However, a recent systematic literature review found 17 cross-sectional and five longitudinal studies that examined the predictive validity of resilience and hardiness for police officers and determined that: "in sum, we found no empirical support for the growing popularity" (Janssens et al., 2018, p. 1) of this concept.

To illustrate this point, the challenge arises to define what MT encompasses: no precise definition is yet to be agreed upon (Fitzwater et al., 2018). However, it shares its main concepts with hardiness (Kobasa, 1979) and the 3 Cs of control, commitment and challenge.

Interestingly, Kobasa's (1979) work was carried out at a time when the understanding of stress and emotion was linked to homeostasis. Consequently, applied practitioners, through psychotherapy and selected homework tasks, sought to enable the maintenance of an equilibrium in, and for their clients. However, striving to reacquire homeostasis following periods of training and/or performance-induced stress may be challenging for individuals working in extreme environments.

Importantly, research on the concept of allostasis (Guidi et al., 2021; Kleckner et al., 2017; McEwen, 2003; Sterling, 2012) has suggested that the brain/body system adapts to...
change, rather than seeking a return to a homeostatic equilibrium. Therefore, prolonged combat/performance experience is hypothesised to alter the set point, which is termed the allostatic load (McEwen et al., 2012). This theory is emerging as a valuable means of interpreting the potential psycho-physiological consequences of prolonged and acute exposure to stress in frontline military populations (McEwen et al., 2012). Therefore, further research and a more thorough appreciation of stress response in this population are required. Consequently, an individualised and context-variable approach that investigates the antecedents and consequences of training and performance-induced stress is essential. As such, I question the utility of SOF and elite conventional units of interventions labelled as increasing hardiness, resilience or mental toughness, respectively. These concepts are problematic to define and consequently challenging to operationalise – and could potentially stigmatise requests for assistance, especially when presented as the unilateral answer.

Notably, more comprehensive solutions are emerging. More recently, Oprins et al. (2021) developed a predictive selection instrument measuring resilience for conventional forces. However, I want to point out that even if the application of this psychometric tool was valid in conventional military settings, its use in SOF selection is problematic. Statistical evidence purports that constructs such as resilience, mental toughness and hardiness can be measured meaningfully prior to selection (Bartone et al., 2013). However, using these measurements, in this example, as a preselection tool so weeding out those in the lower ends of the scale could result in missing out on excellent future operators. This, in part, is because they may yet discover what psycho-behavioural capacities they possess, and the only way to test this is going through the crucible, and perhaps thinking along the lines of self-efficacy (Bandura, 1997) is a better way of going about it. This is especially applicable given the young age and occasional dysfunctional upbringing, which typifies many SOF candidates (e.g., McNab, 2005). The SOF selection process is a developmental experience, not just a rite of passage,
and I would argue that it could be more accurately described as an experiential learning process (Kolb, 2015). Candidates are required to find the wherewithal to continue when most of the training cadre has withdrawn; indeed, a majority have failed with the challenge to learn, return and meet the standard. Therefore, my argument is that, in both SOF and elite conventional units' selection processes, selection is not just about finding the right person for the job but also, and equally important, providing the opportunity for growth (or voluntary withdrawal) that the selection process and subsequent training pipeline presents.

Interestingly, this idea presents another epistemological chain of thinking entirely (Grecic & Collins, 2013): the contention is that the SOF candidates learn and grow from the selection process and continue this process throughout their career as they gain experience and develop their expertise. In this regard, and as I have already highlighted, many SOF candidates fail selection on their first attempt but use the experience to prepare effectively for a second (or third) try.

2.3.4 Alternative approaches

Of course, resilience, MT and hardiness are, many authors argue, viewed as desirable outcomes (Herrman et al., 2011). To make sense of what is going on from a psychological standpoint, going through the SOF selection and subsequent training pipeline, it would probably be more beneficial to draw the parallel from elite sports talent development (TD), (Larsen et al., 2012; Toering et al., 2009), where one of the most important process markers is the opportunity to develop your psycho-behavioural skills during difficult circumstances. Indeed, one possibility could be to research the development of these psycho-behavioural characteristics of excellence (PCDEs); “commitment, focus and distraction control, realistic performance evaluation, self-awareness, coping with pressure, planning and self-organisation, goal setting, quality practice, effective imagery and actively seeking social support” (Collins & Macnamara, 2017, p. 4) as contributory skills, not outcomes in a SOF context.
Examining the arena for development that arises through the SOF selection process itself, it is obvious these challenges offer opportunities for operators to develop (and even discover) their psycho-behavioural skills and allow further development and refinement. Based on anecdotal experience, this already happens to some degree, and with a holistic and specifically designed performance psychology program in place, performance could probably be further enhanced.

2.3.5 Case conceptualisation

A Case Conceptualisation (CC) combines a needs analysis (performer, task and environment). An issue conceptualisation (rationale for choosing interventions) and case formulation (designing a plan for the process) in order to assess and plan effective interventions (Martindale, 2023). One of the most essential aspects regarding CC is avoiding a misinterpretation of what is going on because "such a misinterpretation could instigate a chain of intervention that is less likely to be effective" (Martindale, 2023, p. 23).

Therefore, it is important to emphasise that I am not necessarily suggesting an either/or approach. However, it is important to understand the implications of contrasting epistemological views on how applied performance psychology training for SOF (and conventional elite forces) should be operationalised. I accept that it is highly likely that, completely and a priori, SOF operators develop and, therefore, possess a higher degree of hardiness, mental toughness or resilience than their counterparts in conscripted military settings. It is, however, more likely that these faculties are primed or even uncovered by selection, then continually developed and refined through experience, as opposed to being innate, fully developed and holding predictive value.

Notably, concerning the fields of resilience, hardiness, and MT, before embarking on a quasi-interventional design or an educational training program, I would argue that it would be beneficial for academics to at least go through some form of basic training to get a glimpse of
the uniqueness of a SOF soldier's profession and understand their context concerning the performance arena that SOF inhabit – prior to considering or even implementing a face-valid construct that seemingly (and perhaps as an illusionary or desirably construct academically) ticks all the boxes.

2.3.6 The biopsychosocial aspect

From my experience working with these populations, they do not require more mental toughness, resilience, or hardiness as essential precursors; they are not born supermen! Instead, they need to balance the acquisition of expertise and the need to perform at a high level through continuous growth. Reflecting on the above, it is vital to highlight the biopsychosocial aspect of SOF performance (Blascovich et al., 2004; National Research Council (U.S.) et al., 2008). Naturally, the SOF environment can be described as “macho”, implying in this context that there are people with a high degree of confidence and who will probably obtain a high score on the Sensation-Seeking Scale (SSS) (Zuckerman, 1994; Zuckerman et al., 1978). Such a predisposition may imply that admitting vulnerability or expressing fear is not natural. In delivering performance psychology, this should be catered for through working holistically on the spectrum from well-being to performance. How to express vulnerability and fear is probably something that also needs training, together with subsequent facilitation (e.g., Lebrun et al., 2023). At the same time, how it is done is probably imperative for the effects of the overall performance psychology interventions. To summarise, how the performance psychology package is structured and delivered is always an important aspect, but particularly so in a specialist psychosocial context such as this. Therefore, an overly simplistic focus on mono-theoretical stances, such as resilience, hardiness or mental toughness, can in some way take away the focus needed on developing the "softer" sides and in “harder” areas SOF already have in abundance. I believe this is very important to understand when developing a performance psychology program.
Lastly, another important factor related to resilience and hardiness is the lessons learnt (hopefully) from the recent wars in Iraq and Afghanistan. War is inescapably brutal, especially when policy objectives are blurred, and the endpoint is not distinct. The environment in which acute stress can build and become chronic is made apparent. Neither conventional forces nor SOF are composed of humans who are uber-resilient machines that can be repeatedly deployed without sufficient periods of reintegration into their communities. Indeed, such misuse increases the possibility of suffering and increases the risk of lasting moral injury (Delima-Tokarz, 2016). The relationship between exposure to stress, its context, and its potential effect is neatly encapsulated in the following quotation: “…And if thou gaze long into an abyss, the abyss will also gaze into thee” (Nietzsche, 2014, para. 146)

2.3.7 Are humans more important than hardware?

The pace of technological development in the SOF sector has increased markedly over the last ten years. The focus of this sub-section is to outline what I believe are important considerations to facilitate enhanced performance in the context of SOF. Notably, Greene and Staal (2017) propose that, even if the search for more effective training and selection moves forward, elite performance will still be primarily based in the brain/body system. Yet, there is a need to consider how technology intersects with human performance, especially in relation to SOF. New research also points out the importance of understanding the effect that technological advances have on human performance (Billing et al., 2020). So, what tools have been used or could be applied to SOF?

SOF is replete with technological innovations. Perhaps it is the associated cache for tech companies that lures them toward partnering with elite armed forces. It is conceivable that haptic body suits could be used to aid motor learning, or VR be employed for training simulations to immerse operators in the layout of a building that holds strategic value. Technology is of potentially significant use – but it needs to be employed correctly to assist in the
acquisition and deployment of mental skill, rather than becoming an encumbrance and net loss to performance.

The deployment of heart rate variability (HRV) has been proven to be a useful tool in many settings, both to track total training load and to adjust the intensity of physical training (Makivić et al., 2013). Using data to enhance performance requires the triangulation of several pertinent measures, which could usefully include resting heart rate, heart rate variability, sleep and respiratory rate, along with other pertinent factors. However, if this is the case, it is important that measures are gathered at meaningful intervals, analysed intra-individually, and over the lifecycle of the project/training module.

HRV has also been used as a bio-feedback tool, where the individuals practice relaxation methods such as controlled, diaphragmatic breathing (Schuman & Killian, 2019) and other relaxation protocols designed to facilitate the parasympathetic regulation of cardiac activity to increase in HRV, and decrease arousal (Lewis et al., 2015). Indeed, this has been used as a low-tech approach by snipers for many decades. For the SOF operator, this could provide increased quality of training through individual restitution and assist in developing an individual understanding of mindful regulation of arousal. Data collected over an extended period could be used, provided it was combined with pertinent objective and subjective measures to develop a bespoke profile of combat and/or operational load. However, it is my experience that data collection initiatives such as this commence with the best of intentions, but often peter out as the resource and the commitment to analyse and act on the data wanes. Clearly there is a danger in the assumption that adding technology will “solve the problem”. Consequently, I would look to develop the cognitive skills first, and then carefully test and implement technology to support further development in those areas: not the other way around.
A further important distinction between elite athletes and SOF relates to the work/rest cycle. To prepare effectively, SOF need to imitate operational conditions, but they simply do not know when they will be deployed - whereas an athlete can plan in minute detail as their competition schedule is largely known. Therefore, a failure to understand SOF methods in training can seriously affect the desired outcome. Indeed, some SOF training takes place in sub-optimal settings; for example, drilling with live ammunition, but in a controlled environment, and is a well-established tool in the SOF training canon. Therefore, using methods and measurements that work very well on an individual Olympic level athlete, will probably not have the same impact in a SOF training or operational context. Performing in the military “arena” is the opposite of performance in the Olympics. Therefore, the approach to the above-mentioned methods needs to be carefully tested and implemented for a training context, to maximize the effects of training, if the operators are in a controlled environment. Once the mission is given the green light, SOF (and elite) operators need to perform under immense pressure with a serious risk to their own life. In essence, it is very complex in its inherent simplicity: if you cannot perform at an excellent level during controlled training, you will not become a better operator during combat. It is critical to understand the interaction between the physical and the mental aspect and be able to think creatively regarding the periodisation (Kiely, 2018) to ensure proper integration of performance psychology for SOF. Methods/methodologies are not directly transferable from conventional units or elite athletes, on the contrary it is less disruptive and therefore better practice to conduct training as usual, than to integrate factors that have the potential to reduce the quality of training – because the context is misunderstood, even in the short-term.

2.4 Work that has been done on Special Operation Forces

There are of course SOF performance initiatives supported by NATO Governments currently underway that are official; for example, Canadian Special Forces (CANSOF) have
developed the Special Forces Mental Agility program (SOMA) (Mattie et al., 2020; Mattie et al., 2017), based on what they recognize as the unique requirements of SOF. This program is distinct from well-established conventional Canadian Armed Forces program R2MR program (Fikretoglu et al., 2019). However, SOMA is only a two-day group-based course, so it does not fall under what these authors would consider as a performance psychology program.

In terms of other performance initiatives, in the United States, in 2009 a SOCOM initiative termed Tactical Human Optimization, Rapid Rehabilitation and Reconditioning (THOR3) program was launched. THOR3 was based on the primary assumption that: “Humans are more important than hardware” (Kelly et al., 2013). Initially, the main emphasis of this program was on physical development. More recent extensions to the THOR3 program widened its scope and have been outsourced to a multibillion-dollar civilian company, KBR (KBR, 2020). The program is now described as: “Under the United States Special Operations Command (USSOCOM), the Preservation of the Force and Family (POTFF) program”. This initiative intends to provide a holistic method to address the short and long-term well-being of these (SOF) operators” (KBR, 2020). KBR’s intention is to work in an interdisciplinary manner, with strength and conditioning coaches, dieticians, physiotherapists and psychologists. Based on available, but commercially sensitive information, the evolution of THOR3 can be viewed positively as a step in the right direction: understanding the needs of the special operator, whilst providing a holistic approach to enable performance development and health (Herzog & Deuster, 2014).

In other relevant work, Greene (2019) highlights the role of performance coaching and details the specific needs that the SOF community have in terms of coached performance interventions. A key finding made note of the fact that “almost all students (SOF operators) know what principles are necessary for the strongest performance. But in the stress of the actual scenario, before stimuli and responses have been conditioned, they may not make use of
all those principles” (Greene, 2019, p. 114). This finding reflects my own experiences. For practitioners, understanding that SOF candidates already possess a very high degree of mental skills is important - then adjustments designed to assist in their development can be made. Of course, this would look very different in a conventional unit, where the soldier probably will require a different approach that potentially includes a more in-depth educational phase – augmented by training simulations pitched at an appropriate level.

2.4.1 So, what sorts of things might we want to do?

For a start I believe we, as providers of performance psychology training have to make sure that what we are working on is in fact special, and that the training psychologists are advocating is bespoke. It is important to develop a solid theoretical and empirical base to the work required - if performance psychology for SOF is to be developed to its full potential. Below are some suggestions as to how to proceed:

2.4.2 Bridging the gap from sports to the military arena

Advanced courses are often a part of the training pipeline both for SOF and conventional elite soldiers; however, it is important to evaluate the goodness-of-fit of mental skills training to determine its potential, and to identify any associated limitations to the dynamic, outcome-based training environment. There is substantial evidence that mental skills training is crucial for top performance in sports (Hamilton et al., 2020; Vealey, 2012) but its integration and application in military settings is, I would suggest, significantly under researched. Yet, there is clear potential to develop individually tailored, bespoke, mental skills training protocols for integration into the SOF operational and training spheres.

Another important factor to consider is the SOF training regimen. It is necessary to fully understand the requirements made of an SOF operator and their individual responses to training stimuli: those in question are required to function cognitively at a high level for hours at a time, in a high-stakes environment, but with less food and rest than sport-oriented high
performers. Moreover, they are expected to perform whilst also coping with high levels of stress, both in training and in ‘competition’.

One very interesting research study, relevant to SOF, that investigated the execution of complex tasks in a high-stakes, stressful environment investigated both High Altitude Low Opening (HALO), and High-Altitude High Opening (HAHO; Clemente-Suárez et al., 2017) parachute jumps. Both scenarios require specialised skillsets that call upon high levels of motor and cognitive skills. In this study, a panel of psychophysiologica variables were assessed. The primary finding indicated that HAHO jumps result in a decrease in cortical arousal and a higher blood lactate concentration than HALO jumps. This infers that complex decision-making tasks are potentially more exacting when executing HAHO than HALO jumps (Klein, 2015; Klein, 1993). This is, however, a rare but important example of research that can be used to inform changes to current training and operational practices, but more research of this type is required (Clemente-Suárez et al., 2017).

Lastly, looking into the developing research on PCDEs (MacNamara et al., 2010) and conducting context specific research on SOF could inform psychologists about different methods of developing the talents selected for the SOF training pipeline.

2.4.3 Understanding more about the operators’ cognitive demands in extremis

Learning about the subjective experience of veteran operators is crucial to developing and expanding performance psychology in this context. We need to develop an in-depth understanding, from the perspective of the SOF operator, as to their cognition in preparation for and performance in combat. Accessing this insight and experience is therefore a key resource. Tacit knowledge, defined by Toom (2012) as knowing more than you can tell, can be analysed using established methodologies such as applied cognitive task analysis (ACTA - Militello & Hutton, 1998). Using a combination of interviews and graphics (if appropriate),
the experienced operator can be guided to explore their tacit assumptions in training and following operations. In addition, the process can reveal the factors that inform decision-making, individually and collectively, in response to the mission parameters and objectives. Potentially, results such as these hold considerable value as to the design of an appropriate functional performance psychology training program (Martindale & Collins, 2007).

Less formal, though still important, is the use of storytelling to create and share experiences amongst communities of practice. While this informal method is easy and straightforward, a methodology still needs to be applied to record and share insights for training purposes. Therefore, tacit knowledge can be gleaned using such techniques and shared amongst experienced and neophyte operators to accelerate individual and collective expertise.

SOF is undoubtedly a special community, therefore, applied psychological research needs to be conducted in partnership with the SOF community – not through them, or on them (Collins & Kamin, 2012).

2.4.4 Longitudinal studies in a natural training cycle

A case in point is to determine if, how, when and, most crucially, why performance psychology can be used to potentially determine and alleviate the impact of the training and performance cycle that is fundamental to the SOF workplace. In short, how can human performance psychology be integrated into current working practices? From this, I would be able to suggest and evolve optimal impact. Just as with clients in occupational and clinical settings, careful case conceptualisation and a clear understanding of the cognitive activity associated with high level performers will be essential to determine optimum support (Martindale et al., 2017). Hence, there is a need for longitudinal studies that look at the preparation of SOF, prior to and following their deployment - to engage in thorough debriefs, potentially using specialised techniques developed by psychologists working in allied fields. Professionally, as we develop an informed workplace culture and practise, we need to strive to do a first-rate
job, informed and in possession of not just the ‘how’, but also the ‘why’ SOF do it their way.

2.5 Summary and next steps

The objectives of this investigation were:

1. Exploring the specific and importantly unique challenges encountered when researching and consulting with Special Operation Forces (SOF).
2. An overview of the current state of knowledge on these ‘Combat Olympians’. Highlighting key differences between SOF and conventional forces, then look to provide a critique of the approaches used by practitioners to date.
3. Perspectives on where opportunities might have been missed and offer some suggestions for more impactful (and accurate) research and practice.

SOF deserve their own conceptual subset inside the domain of performance psychology. Importantly, such a careful and well considered application will also benefit elite conventional units as research to enhance military performance is peer-reviewed (where possible) and good practice is shared more widely. I hope to have evidenced that existing research is inadequate. Where it has been carried out in relation to SOF operatives it has, in most cases, not been carried out with the intention to enhance performance but rather (albeit I would argue) to extend the scope of a psychological construct in conjunction with a clearly special population. As with other performance domains, it is not practical to simply export sport, and other sub-sets of psychology directly into the SOF domain (Pecen et al., 2016). Indeed, relying on constructs which are confusing and lack empirical evidence in how to train for optimum impact, such as the global application of resilience, will almost inevitably miss the mark and potentially stifle more promising avenues of research. This quite apart from the rather more significant impacts (when compared to sport) on the receiving performers. As stressed by Collins and Kamin (2020), if we, as performance psychologist are an applied field, we
need to put performer needs first; this especially in a field with such serious consequences for less-than-optimal performance than the domain I have described in this chapter. Our approach needs to be combined with a solid epistemological chain that underpins the first SOF principle: humans are more important than hardware.

Therefore, the next step in this thesis is to conduct context and culturally specific research on NORSOF, to close some of the gap in the research that has been identified in the present chapter. To achieve this goal, I have deliberately constructed my investigations according to the chapters: a) I started with looking at how MST can be integrated in a specific high-pressure context. b) To understand more about the complexities of decision making in an extreme environment, I employed an ACTA to understand more about how performance psychology can be used to enhance training, more specifically in military freefall jumping. c) Lastly, as it relates to NORSOF, I looked at performance psychology holistically, and investigated how it can be integrated into a Sabre squadron preparing for a mission, and what the operators’ experiences were after training, but prior to deployment, and post deployment.
Chapter 3 - Methodology

3.1 Introduction

Designing a thesis project involves thorough consideration of different ontological positions, how to develop the epistemology and methodology, and the decisions that follow. In other words, what can be regarded as my epistemological chain for the research (EC - Grecic & Collins, 2013). An EC can be described as my guiding concept of how to conduct my investigations, where there is a dual aim of both presenting causality in my choices and to be open and “transparent” about them (Bryman, 2016, p. 399). As a pracademic, meaning both a practitioner and researcher (Posner, 2009), my decisions are at the core for underpinning each of the empirical studies. The logic underpinning the EC are presented thoroughly in this chapter, moving from the overarching ontology through to the more detailed choices around methodology and analytical choices for each study. As such, I move from the general through to the specific, displaying shorter and more precise sections that entail each study. I will start with the overarching philosophical approach and explain the choices that I have taken, then explaining my methodological considerations, the pro et contra, and how my empirical chapters are built up, before going into the points of performance for qualitative studies.

3.2 Philosophical approach & ontological foundations

The intention of this thesis was to investigate how bespoke performance psychology can be developed and integrated in the realm of SOF. These operators conduct high risk training and operations, are all volunteers, and are selected and trained to solve missions GPF are unable to (Searle, 2017). As explained in Chapter 2, there seem to be several current practices in performance psychology which are applied relatively uncritically to the military field, especially SOF (Raabe et al., 2021). Not only are they uncritically applied, most of the methods and applications open to research also display, in my mind, a lack of presented and considered
critique to their own philosophical approach. This is, of course, poor practice in a general sense. My main concern, however, is the apparent lack of understanding of the profession it is meant to assist in developing certain aspects. In short, and as highlighted in Chapter 2, much of the work seems to lack a sufficiently careful and comprehensive case conceptualisation (Martindale & Collins, 2007). As a result, many applied papers seem to be psychologists applying their own pet concepts without more than a minor understanding about what the job is and who the people who have these jobs are in these already existing COPs (Li et al., 2009). Conversely, it could be argued that I am trying to do the same, in applying my pet concepts. However, as I will explain throughout this chapter, several strategies are employed to decrease the possibility that my biases are influencing the questions posed, the methodological options, and the outcomes. Furthermore, examining the disadvantages of my own methods are an important part of this chapter.

Different ontological positions are closely linked with philosophical considerations. This in turn makes it difficult when claiming decisions to be completely either – or - propositions. In sum, there are general philosophies turned to ontology, asking the big questions about how to make sense of the world (Bryman, 2016). Importantly, however, these decisions are nuanced rather than black and white, making them a focus for carefully weighted argument rather than ‘this is the right way’.

Based on this foundation, the novelty of my research, and the aim of understanding my participants’ broad contextual perspective, the choice of my ontology for this thesis falls into the pragmatic humanism category (Schulenberg, 2021). Pragmatism indicates a concern for practical matters and is often attributed to “real world research” (Robson & McCartan, 2016, p. 28). This also reflects the levels of complexity inherent in the population of interest. As explained in Chapter 2, the level of expertise already existing in SOF is on par with Olym-
pians. In short, I deduct that there are already lots of knowledge within the target group, making an approach that secures their knowledge of greater potential worth. Furthermore, pragmatism places a high regard on the reality of the inner world of human experience in action. As such knowledge is both constructed and created in ourselves, in our social settings, and how we interact with the environment (Johnson & Onwuegbuzie, 2004). In addition, the humanism aspect refers particularly to “humans’ creativity of action, imaginative redescriptions, inventions of new vocabularies and metaphors, and unpredictable forms of self-creation” (Schulenberg, 2021, p. 35). Therefore, I regard the humanism aspect as very important to my view of the world. In summary, pragmatic humanism encompasses the aspects I found most fitting for my investigations and prior experiences. The winning argument being – from this philosophical and methodological stance, I can interpret data from the participants’ viewpoints and explore how and why their opinions are formed and relate to their experiences, thus enabling me to refine theories that informs current practice - in the context of performance psychology for SOF.

Before delving into critiques against adopting a pragmatic ontology, it is important to assess and plan for the weaknesses of the method itself. One of the concerns, especially for my research, is that it can be too abstract and generalised to fit a specific context (Johnson & Onwuegbuzie, 2004). On the other hand, one of the major critiques of the method is the exact opposite, that it can be too context dependent (McCaslin, 2012). Both viewpoints were considered, and to ensure that the context specificity is understood and pronounced clearly, I reviewed the field of performance psychology for SOF in Chapter 2. Indeed, and of relevance to this concern, it is not the goal of this research to generalise to larger populations. On the contrary, as discussed in Chapter 2, the development of any performance psychology program needs to be bespoke, and especially so in this case (Martindale & Collins, 2007).
Reseaching other possible ontologies to fit my research, there were several that made sense. Most notably social constructivism, which states that knowledge is socially constructed and that learning in this context is seen as a conflict between what you know, and how new insights are further developed in COP’s (Fosnot, 2005). As discussed in Chapter 2, SOF selection is a learning experience: would-be operatives facing these sorts of conflicts (what you know vs new knowledge) are (usually) strong minded experienced soldiers who become inculcated and recruited into SOF based on their fit with the ‘way’ (or fail selection). However, since pragmatism includes constructing our inner world, it also adds the important aspect of taking account of and orienting ourselves in the reality we experience, I believe both aspects are crucial in understanding the operator’s perspective. Furthermore, pragmatism seeks a middle ground between philosophical dogmas (Johnson & Onwuegbuzie, 2004) so, in adopting this pragmatic approach, it allows for more creativity when seeking to understand the participants’ experiences, without the boundaries of dogmatism and “traditional dualism” (Robson & McCartan, 2016, p. 29). Being able to utilise common-sense into the operator’s context, I believe is most fitting to my applied research. The disadvantage with my approach could be becoming too “focused on the micro level at an expense of the macro” (Elder-Vass, 2022, p. 262), implying that a pragmatic approach is too concerned with individual experiences, and not looking at the larger context. I have focused on countering this by going in depth on the systems that directly influence the participants (selection, training and programs already in place) and the context in which they operate.

3.3 Methodological framework

Based on my ontology of pragmatism and that ontology and epistemology are linked, I next searched for a methodological framework to make decisions about my research (Braun & Clarke, 2013). Even though I have conducted some quantitative measurements (see detail in Chapter 4), and that each study differs methodologically, the natural choice was a qualitative
approach. This was chosen as it enabled me to get a deeper understanding of the lived experiences, thoughts and behaviours of the operators (Braun & Clarke, 2022), which is fitting given what was discussed in Chapter 2. Furthermore, as implementing a bespoke performance psychology package is novel, it enabled me to get under what is just on the surface, and to utilise these Combat Olympian’s (Chapter 2) experiences to do the research for them and together with them (Collins & Kamin, 2012). Therefore, an increase in quantitative approaches would probably be more useful down the line when a performance psychology package is in place, to further evaluate different effects of the program when the need for that arises (Bryman & Bell, 2011, pp. 150–166) and to refine it as when it is necessary.

Despite this qualitative predominance, however, I made use of mixed methods where appropriate. In sum, this enabled me as a researcher to take an approach of methodological pluralism (Willig, 2013). For example, in Chapter 4, I sought to triangulate results based on different methods to answer the specific research questions. Using this framework enabled me to adhere to my EC and increase the transparency and genericity of my research overall. If I had chosen to stick to one methodical approach, it would have to my mind limited my findings.

3.4 Pro et contra

As discussed earlier in this chapter, ontology and epistemology are linked, and the importance of providing an EC is vital to display transparency and causality in the research. I chose to conduct case studies in two of my empirical studies. A case study aims to study something that happens in real life using several methodological approaches to understand in depth what is going on (Yin, 2018). However, there are several critiques against adopting a case study approach. With reference to my studies - as discussed earlier in the chapter, perhaps the most salient is that it could be biased toward verification of my ideas (Flyvbjerg, 2006). To counter this, I have employed Yin’s guidelines for “exemplary case studies” (Yin,
2018, pp. 242–248), where I have focused on the significance of researching this context/population in Chapter 2, in setting clear boundaries for my case studies, adopting a broad scope of views to analyse my findings with sufficient evidence, and hopefully writing the thesis in an engaging manner.

The important factor for me was the ability to choose a strategy in line with the aims of my research (Robson & McCartan, 2016). Although, this choice of strategy was not obvious at first, as I come from a tradition of action research (Coghlan & Brannick, 2009), where practice leads, and theory supports. However, about the novelty of my research, jumping the hurdle of a deeper understanding of what is the current situation, which could have been a possibility in choosing AR, tipped the scale for me when landing on some of my strategies. I believe that further down the line, in research following this thesis, action research will be my preferred strategy to evaluate and improve upon performance psychology programs that are already underway in my own organisation, the NAF (Coghlan & Brannick, 2009).

Other approaches were adopted, depending on the specific context and objectives of the study. For example, in Chapter 5 I wanted to research cognitive demands. In the field of human decision making there are several theories. Whereas the behavioural decision-making community focuses on human limitations and seeks ways to reduce biases and mistakes, the NDM community, as it performs macro cognitive research, focuses on human capabilities and regards good performance as much more than the absence of mistakes (Klein & Wright, 2016) and after conferring with my supervisory team I choose to conduct an Applied Cognitive Task Analysis (ACTA - Militello & Hutton, 1998). I had the option of going with a more complex CTA, in particular the critical decision method (CDM) (Klein et al., 1989). Before I decided between these different methods, I conducted an online training course to enable me to learn in depth the different methods. I decided on an ACTA, in sum the applied focus of the method and the research area I was interested in made for a strategy
that ideally suited my EC. The disadvantage in choosing ACTA as my strategy is that it is viewed as more simplistic model as opposed to the CDM (Militello & Hutton, 1998). To counter this, I performed a pilot/preparation study with the leading experts and trainers in MFF to have a set procedure in place before conducting the ACTA, more specifically having the task diagram (TD), knowledge audit (KA) and simulation interview (SI) in a structured format, based on the trainers’ input. This enabled an in-depth context adjusted ACTA resulting in a cognitive demands table (CDT), specific to the operators in that unit.

The next decision was to choose the right interview format and to develop it to operationalise the research questions and provide rich in-depth data (Bryman, 2016). Several considerations had to be made on the shape and form of the semi-structured interview guide. In my research, there are no real contenders or alternatives to a semi structured in depth interview format, especially given the flexibility it offers. As one of several considerations, I needed to follow up with the participants when they were answering to enable them to elaborate and clarify where required (Bryman, 2016, p. 483). This made the semi structured interview my method of choice.

As a second consideration, however, there are several methods available when it comes to analysing the data. After researching potentially suitable methods, I was left with three options: Narrative Analysis (Howitt, 2019), Interpretive Phenomenological Analysis (IPA) (Willig, 2013), along with various forms of thematic analysis (Braun & Clarke, 2013). On the one hand, IPA is suitable if I wanted to research how the operators’ experience a single phenomenon, whilst narrative analysis is suitable if it is a “life/history” form (Howitt, 2019, p. 74). Having experience from my master’s degree thesis on Narrative Analysis, made my choice of approach easier, since I had actual experience with the method. Furthermore, with regards to the rich data and the purpose of the investigation, a Reflexive Thematic Analysis (RTA) (Braun & Clarke, 2019, 2022) was chosen as the best suitable option. There are
several critiques against employing a (variant of) thematic analysis, one being that it lacks “identifiable heritage” (Bryman, 2016, p. 584), on the other hand, a significant amount of research on this method has been published and developed in the last decade (Braun & Clarke, 2019) and the articles produced presents a solid foundation to adhere to principles derived from others’ research. However, another important aspect to consider is the pitfall of conducting methodolatry (Chamberlain, 2000) in thematic analysis: trying to copycat the quantitative field where numbers prevail, and validity and rigour is sought through adhering to a specific ruleset. I have sought to counter both these critiques by being open and transparent about my analytical choices (Braun & Clarke, 2022).

A very important concern when it comes to qualitative research is the long lasting and ongoing debate between the qualitative and the quantitative approach (Robson & McCartan, 2016). Based on recent evolutions in the literature, it seems that several of the criteria from quantitative research are expected to be adhered to in qualitative research, like validity, transferability and objectiveness (Braun & Clarke, 2013). However, qualitative research follows another paradigm and what is regarded as excellent qualitative research should adhere to a set of criteria to move beyond “clear as mud” (Caelli et al., 2003), in other words, working on a specific approach to my investigations instead of a generic one.

The main issue for qualitative researchers is that “either they combine several methodologies or approaches or claim no particular methodological viewpoint at all” (Caelli et al., 2003, p. 2). Taking these considerations to heart, I have adopted the eight “big tent” criteria in my research (Tracy, 2010, p. 1) as a part of my EC:
### Table 3.1

**Big tent criteria**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worthy topic</td>
<td>My investigation is novel through providing a unique voice for the operators and instructors to voice their opinion in an environment with limited access.</td>
</tr>
<tr>
<td>Rich rigor</td>
<td>I have obtained “significant, abundant, and complex theoretical constructs” (Tracy, 2010, p. 4). This was done through collecting large amounts of data, spending time “in the wild” (Collins &amp; Collins, 2017), within a variety of contexts.</td>
</tr>
<tr>
<td>Sincerity</td>
<td>I have proven reflexivity throughout my research and transparency in my findings.</td>
</tr>
<tr>
<td>Credibility</td>
<td>The extended use of member reflections, both in voicing the operators’ opinions about the written product but also how they themselves experienced the applications in real world scenario.</td>
</tr>
<tr>
<td>Resonance</td>
<td>I have aimed to represent my findings in an honest and causal form, and even if the transferability is limited to other populations, it is highly relevant in the specific context. My investigation hopefully makes up lost ground in transferability with the depth of my investigations. Furthermore, the population are small and certainly special (cf. Chapter 2).</td>
</tr>
<tr>
<td>Significant contri-bution</td>
<td>My research is novel and unique because of the context and environment the research is conducted in.</td>
</tr>
<tr>
<td>Ethical</td>
<td>The ethical consideration in my research is complex and important. In addition to procedural and situational ethics. Most of the participants in this research have been in combat. I have taken measures to understand and cater for psychological safety and follow ups were needed. I established a network were clinical psychologists, both in service and outside could assist if needed. In addition, my own experiences are a strength and not a weakness in my communication with the operatives. This was an important aspect of my ethical approval.</td>
</tr>
<tr>
<td>Meaningful coher-ence</td>
<td>I have made sure there is a causality in my EC, that flows through my investigations.</td>
</tr>
</tbody>
</table>

*Note:* This figure adopted from Tracy (2010) is showing how I have taken measures to adhere to the criteria widely accepted as important for conducting qualitative research.
3.5 Applying these principles to each of the empirical chapters

The main methodological framework fitting for my thesis was the qualitative, supported in one study by the quantitative. Therefore, following my EC, I now explain the methods chronologically from the empirical chapters. “Methodology is the reflective self-consciousness of the professional researcher” (Eikeland, 2008, p. 312). This quote highlights the importance of the ability of not just following rules, but to be able to make informed analytical judgements as a researcher.

In Chapter 4, an exploratory case study methodology (Bryman, 2016; Robson & McCartan, 2016; Willig, 2013; Yin, 2018) was selected to provide a rich in-depth account of the real-world phenomenon within a specialised context. This approach was adopted to draw pertinent information from multiple sources and to enable the triangulation of separate, though interdependent, sources of data. This included the snipers and their instructors, together with access to historical quantitative data which enabled comparisons to be made between the shooting performances and pass rates of the previous, and present training cadres. The semi structured, in-depth interviews were prepared, and pilot tested on similar experienced snipers to make them flow and to the point. The same procedure was conducted on the sniper instructors, where three focus group interviews were conducted during the course, with the same interview format on each occasion.

Purposive maximum variation sampling (Bryman, 2016) was selected as the preferred method (Howitt, 2019), as it enabled a spread in age, experience and which units the snipers were from. To analyse the data an RTA (Braun & Clarke, 2019, 2022), both for the sniper candidates and the instructors was employed. To analyse the shooting scores over time, a quantitative comparative analysis was deployed. In Chapter 5, an ACTA was conducted (Klein, 2015; Militello et al., 2015; Militello & Hutton, 1998) to understand more about the cognitive demands and decision-making processes in HAHO parachute insertion. Purposive
maximum variation sampling (Bryman, 2016) was done to evenly spread the participants along the operator-expert spectrum for this activity. The phase 1 study consisted of developing an in-depth bespoke version of the ACTA, together with the most senior instructors, to ensure that the process was valid to their milieu. After the phase 1 study, the ACTA was streamlined and developed to the specific context. It utilised the Task Diagram (TD), Knowledge Audit (KA) and Simulation Interview (SI) of the operators to develop the Cognitive Demands Table (CDT), (Militello & Hutton, 1998). To analyse the data, a version of RTA was employed (Braun & Clarke, 2019, 2022).

In Chapter 6, an exploratory longitudinal case study methodology (Bryman, 2016; Robson & McCartan, 2016; Willig, 2013; Yin, 2018) was selected to provide a rich in-depth account of the real-world phenomenon, over a longer period, but within a specific context. This in-depth approach was adopted to understand how the operators experienced the performance psychology training package. The semi-structured interview schedule was piloted on senior operators to correct any mistakes and establish a good flow. The semi-structured in-depth interviews were conducted on three separate occasions, before the interventions, after the interventions and after deployments, with a different schedule used each time. In addition, a follow-up interview in a group setting was conducted. Purposive maximum variation sampling (Bryman, 2016) was chosen, to spread the participants in age and experience; this was conducted by the troop commander. An RTA was conducted on the interviews to analyse the data collected (Binder et al., 2012; Braun & Clarke, 2019).

3.6 Consequential considerations

3.6.1 Trustworthiness

To explain my ontology, epistemology and choice of methods, without reflecting on my own philosophical views (Eikeland, 2008) decreases the trustworthiness of my thesis. As
subjectivity and reflexivity are regarded as very important aspects, regarding the trustworthiness in qualitative research (Braun & Clarke, 2013, p. 36), my own career in the Norwegian Armed Forces, spanning over 25 years with different leadership roles and multiple deployments to conflict zones has enabled me to learn and develop, not only as an operator and leader, but more importantly, as a human being. For me personally, being in combat and leading men was existential: the experience never leaves you; it just takes different shapes and forms. Therefore, my own “praxis, or Ausübung” is geared towards deliberate practice (Eikeland, 2008, p. 269), with the goal of working towards “phronesis or practical wisdom” (Eikeland, 2008, p. 53). Phronesis in the Aristotelian meaning is how we aim to make sense of the world around us and in us, towards the perhaps unobtainable goal of behaving with virtue, also ethically. However, just because it is difficult does not make it any less important.

“Phronesis is metacognitive in that the phronimos (person endowed with phronesis) reflects on and evaluates their cognitions, emotions, and actions in terms of their wisdom, desirability, and harmony” (Kristjánsson et al., 2021, p. 241). Having guiding principles as a researcher and practitioner and being open about my own considerations is good reflective practice (Braun & Clarke, 2019). Furthermore, influenced by my previous education in integrative therapy (Petzold, 2007) and my master’s in applied coaching, together with my present development as a researcher and performance psychologist in training hopefully enables me to be open an honest about my subjectivity. Nevertheless, while I will make clear this position in relation to the data and the participants, and my subjectivity – or lack thereof, according to Braun & Clarke (2019) and Gough & Madill (2012) can be viewed as a resource, too. Another important consideration is regarded as “going native” (Bryman, 2016, p. 394). Although a native in the big picture within the NAF, I have not served together with any of the participants, and not in the same capacity. Therefore, my native-ness has enabled the access to be able to
conduct this research but has not confounded my consideration of the data. Consequently, obtaining access to this performance domain, contributing to the knowledge held within it, and having access to the data derived from it, affords me a privileged position that offsets any perceived benefits of assuming an objective position – in relation to the phenomena in question (McGannon et al., 2021). Furthermore, since I also conduct a variety of interventions (see Chapter 4, 5 and 6 for details) this reflexivity (Finlay, 2002), both regarding the research and my interventions conducted with the operators, has been of the utmost importance throughout the research and will continue to be so in the years to come. In addition, my discussions on the interventions and my role in it with my supervisory team, before, during and after has been an important part of maintaining this reflexivity.

3.6.2 Specifics of my research process

For clarity, all the interviews are conducted by me in Norwegian, and then in the final stages translated to English to include my supervisory team. Rather than using a backtranslation technique (Behr, 2017) member reflections ensured that my interpretation and translation were accurate. Furthermore, all participants participated under a triple ethics process; a generic approval was obtained from the NAF, in addition local permission from the Army and finally the University Ethics committee.

3.6.3 Generalisability

An important aspect of research is if it is transferable to larger populations or generalisable within the context of the research (Burchett et al., 2020). My investigation is on a small sample of human beings in total to begin with, as discussed thoroughly in Chapter 2. The aim is not to generalise to a larger population, rather to help to contextualise the concepts to the actual population. Importantly, however, this small sample must be contextualised against the small and specialised population from which it is drawn. As such, comments should be considered critically to evaluate the extent to which they may offer some general advice.
3.6.4 Applied vs theoretical contributions

As mentioned in the introduction, as a pracademic (Posner, 2009), I aim at advancing both the applied field and to some degree the theoretical aspect. However, the most important aspect of this investigation has been to establish a foundation of how bespoke performance psychology can be taught and trained within the cultural context of NORSOF. In this regard the emphasis is towards the applied field; at the same time testing out different interventions and methods if they are a good fit or not.

3.7 Concluding remarks

As discussed in this chapter, there are several considerations that has been made to develop a clear EC and display the eight “big tent” (Tracy, 2010) criteria for qualitative research. My choice of philosophical and methodological approaches was appropriate for the overall aims of my research. As the goal is to improve current practice by a bespoke performance psychology package in a novel field, understanding my own native-ness and subjectivity continues to be important. Furthermore, establishing a coherent flow through the empirical chapters enabled me to conclude with further recommendations in this novel field. Finally, as a performance psychologist and researcher in training, this investigation has also enabled me to develop my skills in both fields, being able to plan, conduct, analyse and recommend solutions based on a scientific and practical approach.
Chapter 4 – Shooter Ready? Integrating Mental Skills Training for Snipers

4.1 Introduction

4.1.2 Overview

In Chapter 2, I conducted a review of the novel field of performance psychology in relation to SOF, and what the specialness in Special Forces entails and embodies. As alluded to previously in Chapter 2 – SOF activities occur on a continuum with highly specialised activities anchoring one side – and with more general, though highly skilled infantry activities anchoring the corresponding side. I also identified germane areas of enquiry that require further research. Furthermore, instead of presenting outcome strategies, especially resilience, I sought to present contributory skills (Chapter 2). Subsequently, in Chapter 3, I outlined my philosophy and methodology for my preferred strategy for research conducted on SOF – in the context of performance psychology.

In the present Chapter, I am investigating the conventional end of the special services continuum and, more specifically, how performance psychology techniques can be applied in this context.

4.1.3 Purpose of the investigation

Therefore, adopting a case study approach, I want to investigate the effects of integrating MST into an advanced sniper course and address the following research objectives:

1. Examining the efficacy of a bespoke MST programme, based on pre-existing grounds, with domain-specific adjustments applied in an advanced sniper course.
2. Investigating the participants' perceptions of useful programme elements.

4.1.4 Mental skills training

In the world of professional sports, it is seen as a logical extension of physical training to learn, refine and integrate psychological skills to perform at the highest level.
Thus, the positive impact of psychological skills interventions is well-known and accepted when it comes to improving human performance (Birrer & Morgan, 2010; MacNamara et al., 2010; MacNamara et al., 2016; Mahoney et al., 1987; Whelan et al., 1991). In addition, there is a considerable body of research that indicates that the implementation of mental skills training (MST) for performers and practitioners who routinely experience stress-invoking events, such as in the role of first responder or in the field of emergency medicine, enables better task performance (e.g. Anton et al., 2017, 2020; Cocks et al., 2014; Deshauer et al., 2019).

Internationally, there remains a gap in the human performance psychology research literature as to how allied MST techniques and practices can best be utilised in the military (Jensen et al., 2020). In a recent systematic review where 100 articles that met the authors’ search criteria were analysed - the key findings suggested there is an urgent need for research in how to prepare for difficult situations both in military, law enforcement and first responder settings (Griffith et al., 2022). Finally, though no less important, is the need to explore the psychosocial underpinnings of the application of mental skills to military settings; for example, how these ideas are perceived by instructors and soldiers under training.

In parallel to these outputs, military research on MST suggest that these skills can be applied to a variety of tasks (DeWiggins et al., 2010), and recent reviews support the position that mental skills training is an important factor for maintaining and improving task performance in military populations (Raabe et al., 2021; Rodden-Aubut & Tracey, 2021). This increased focus on both physical and mental performance within tactical populations (e.g., police & military) has created a more open forum for the implementation and delivery of psychological services (DeWiggins et al., 2010; Fitzwater et al., 2018; Jensen et al., 2020; Meyer, 2018). Indeed, the military was and continues to be a major growth area for performance psy-
chologists (Raabe et al., 2021). Importantly, however, I would suggest that performance psychology is seen as an adjunct, rather than an integrated part of performance development for these populations, as outlined in Chapter 2.

### 4.2 Specific mental skills training for snipers

With reference to marksmanship and its associated psycho-behavioural aspects, (e.g., Konttinen et al., 1995, 2007; Laaksonen et al., 2018; Tornero-Aguilera et al., 2021) interesting work has been undertaken to understand and improve shooting skills - albeit in a sport shooting environment. Although aspects of firing a weapon are similar, whether as a rifleman or athlete, when it comes to motor skills (Magill & Anderson, 2014) and their application, there are potential pitfalls that requires to be avoided; for example, one such pitfall is that sport related shooting is performed in controlled environments, whereas a rifleman and indeed a sniper must perform the task in a highly unpredictable environment, often with the looming threat of being directly targeted or captured (Dougan, 2004; Pegler, 2011). However, with reference to military and civilian law enforcement - respectively, the research is mostly concerned with the delivery of marksmanship training in general, not educating specialists (i.e., snipers) (Chung et al., 2006) to determine how their own stress influences shooting performance (Giessing et al., 2019; Liu et al., 2018; Nieuwenhuys & Oudejans, 2010; Oudejans, 2008). Furthermore, a recent quantitative study on shooting performance under physical stress utilising Norwegian Special Operators demonstrated a positive difference in shooting performance between experienced (e.g., operators who have participated in missions’ abroad) and less experienced operators - despite both groups being erroneously classified as expert level marksman (Buskerud et al., 2022).

Clearly, deliberate experience in addition to the acquisition of expertise plays an important role in attaining a high(er) level of performance. However, this study does not identify specific cognitive strategies that may have contributed to the differential effect. Therefore,
this specific literature and the resultant research findings are informative, but there remains a lack of data regarding the perceived impact MST training can have in a special military context.

I contend that there are several reasons for this; for example, if the methods to deliver MST are derived from a sport-specific performance psychology perspective, it needs to be tailored to the military environment. In elite sports, the performance context is a commonly understood and accounted for factor (e.g., music Pecen et al., 2016; and dance Henley, 2016, (Chapter 2). This is not the case in the military. For example, mental health and allied Cognitive Behavioural Therapy (CBT) techniques have been imported wholesale from clinical practice – without consideration of how to enhance performance – or the culture in which these techniques will be employed (Chapter 2).

In the context of the present study, given the skill level of the participants involved, it would be misguided and therefore poor professional and scientific practice to develop a psycho-educational training program according to tenets derived from applied academic discourse. Rather, in partnership with and working to assist pre-elitie and elite snipers what is required is more in-depth work as to how MST can be operationalised in the context in which advanced snipers are going to operate (Collins & Kamin, 2012).

Sniper selection and training is a high profile and high challenge course in most militaries (Bakkeli, 2008). Furthermore, due to a lack of quantitative data regarding results emanating from similar interventions, I deemed it necessary to contrast results from the present revised sniper course to that of earlier courses. In addition to collecting objective, quantitative data it is my contention that the expert viewpoint of instructors is often overlooked. Having instructors record their impressions of the revised course content and its effect on the cognition, behaviour and overall performance of the training cadre formed an important constituent part of the overall evaluation. The final component to the three-pronged evaluation featured
the sniper candidates’ experience of the psycho-educational interventions and how it influ-
enced their performance.

4.3 The context of the advanced sniper course

In most modern militaries the training curriculum required to be a sniper is arguably
one of the most demanding routes a conventional soldier can volunteer for; moreover, the
Norwegian Army’s sniper instructor detachment is based upon the ethos, curriculum and
standards set by what is widely recognised as the pre-eminent training school for snipers - the
US. Marine Scout/Sniper school – a course which is notoriously difficult to pass (Schogol,
2017).

The advanced Army sniper course is seven weeks in duration. Prior to joining the ad-
vanced training, all candidates are required to a pass a three-week introductory curriculum
that is designed for conscript level marksman. The advanced education is developed for pro-
fessional soldiers and non-commissioned officers, mainly from SOF and recce/patrol units, so
that the basics of fieldcraft and small unit tactics are already well established. The course is
built around sniper tactics and techniques. In short, these skills -besides shooting from several
weapon platforms in a variety of different contexts include navigation, stalking, observing,
using both analogue and technological methods to measure wind, distance, angle, temperature
and dew point. Candidates are required to understand the internal and external ballistics and
be able to use advanced theory, in a practical setting, in a high-stakes environment, using and
employing advanced equipment efficiently.

As a sniper pair, or as a single shooter, the sniper needs to be proficient in delivering
both precise long-distance shots at night and during the day. The ability to rapidly interdict
and acquire moving targets and shoot from several improvised shooting positions, both in an
urban and rural environment, is also taught and assessed. To pass the course, the candidate
needs to have a 70% pass rate on fieldcraft, and an 80% pass on the shooting component of the course. In the advanced sniper course, there are 135 tests, of which 70 are shooting based (Huse, 2020). The tempo of the course is high, 12+ hour days are commonplace, and the sniper candidates’ performance is assessed daily. These factors combine to make it one of, if not - the - most demanding course for soldiers in the Norwegian Armed forces and serves as the training pathway to becoming an operational sniper (Huse, 2020).

4.4 Methods

4.4.1 Research design

An exploratory case study methodology was selected to provide a rich in-depth account of the real –world phenomenon within a specialised context. This approach was adopted to draw pertinent information from multiple sources through separate, though interdependent, sources of data. (Bryman, 2016; Robson & McCartan, 2016; Willig, 2013; Yin, 2018). Data was analysed with RTA (Braun & Clarke, 2022). Furthermore, outcome scores from present and past courses were obtained from NAF. In addition, member reflections were employed to enhance trustworthiness (Birt et al., 2016; Koelsch, 2013; Motulsky, 2021) whilst a one year follow up to understand more about the perceived effects and retention of the MST curriculum was conducted.

I wanted to understand more about their learning experiences (Lachman, 1997) and how effectively these had been utilised when the participants deployed – or in some cases embarked on new careers. After the follow up was completed with the snipers, the complete study in its final stages, with the follow up of the snipers (Birt et al., 2016) was then presented via email and the instructors were invited to voice their opinion on whether the study resonated with their own experiences and to comment and ask questions they might have. This also gave the instructors time to test out what they picked up from the intervention and how it
worked. Input was obtained through individually arranged telephone calls, so they could voice their opinions of the questions presented.

**Figure 4.1**

*Overview of the research on the sniper course:*

*Note:* This figure displays the timeline and when the milestones were performed in my investigation.

Ethical approval from the University committee and local permission to conduct research in the Norwegian Armed Forces was granted. All the participants on this course are volunteers and are awarded a place on merit. Prior to the commencement of the course, participant information letters were combined and sent out with pre-course course material. At the introductory session – on day one - participant information sheets were distributed. This was followed by a brief explanation of the research project and its educational content and the first author’s role in it. It was made that clear that I had two functions: a role as a performance psychologist and as a researcher. Furthermore, it was made explicit that regardless of my professional background, I was not there as an assessor, and would remain neutral in the assessment of candidates’ performance.

The participants were given a week to decide whether to take part in the research study, and if they opted in, were required to provide written informed consent. Participation
was voluntary, and all participants were given assurances as to the confidentiality of their responses and that their identities would not be revealed in the thesis, or in any subsequent publications. Furthermore, I clarified that no information would be passed to the instructors about any of the candidates: I also repeated this message to the instructors.

4.4.2 Participants

Ethical approval from the University committee and local permission to conduct research in the Norwegian Armed Forces was granted. Prior to joining this course all candidates are required to pass a three-week introductory programme that is designed for conscript level marksman. The advanced education is an all-arms course developed for professional soldiers and non-commissioned officers, so that the basics of fieldcraft and small unit tactics are already well established. Since 2016 the number of SCs on the course has varied between 10 to a total of 14 participants on the 2020 course. In total, all 14 sniper candidates (SCs) on the 2020 course volunteered. To reflect the variation in the different units across the Norwegian military personnel, the purposive maximum variation sampling (Bryman, 2016) was carried out by the head instructors. This ensured a realistic proportion for participants from different units. In addition, it had the effect of reducing the number of potential participants to eight to conduct the in-depth interviews within an acceptable timeframe. Participants (n= 8) were coded Foxtrot, Golf, India, Lima, Mike, Sierra, Victor, Zulu. They were aged 20 -26 (M=23.7, SD 1.8) years in service ranged from 2 years to 7 years (M=5.5 years, SD 1.7); three respondents had already been deployed on combat duties.

In addition to the recruitment of SCs, the instructors, all of whom are subordinate to the sniper course leader, were also approached to participate. Unlike the participants, the instructors were performing military roles assigned to them by their senior commander. Once again, however, participation in the study was entirely voluntary. Assurances were provided to confidentiality and all participants were issued with an information sheet and an informed
consent protocol which contained contact instructions for the me. All four instructors (n=4) opted to participate (Blue, Red, Grey, Gold). Aged 30-35 (M=33.5, SD 1.9).

4.4.3 Mental skills training overview

The present MST psycho-educational intervention is designed to be in-keeping with the concept of adaptive skill, termed as the “the essential ingredient of developing expertise” (Ward et al., 2018, p. 2). My goal for each sniper candidate was for them to acquire pertinent MST knowledge, and to develop a deep understanding as to why they may consider using specific, performance enhancing MST techniques. In partnership with the training cadre, I sought to provide performance options rather than “solutions”; I wanted the SC to discover and develop their own interpretation of the MST techniques by presenting them in multiple ways (Spiro et al., 1992); thus, enabling them to learn the basics of the mental skills techniques, apply it for themselves and evaluate what they did, and further refine the MSTs employed to meet their own needs. To individualise the content of the MST psycho-educational training package, each participant was invited to develop their own version and thus ensure that the functional complexities of the curriculum were preserved (Ward et al., 2018).

Moreover, as part of the present psycho-educational intervention, I elected to define the sniper candidates on the expertise spectrum. I regarded them as pre-elite (Collins & MacNamara, 2022). This is important as stands in contrast to a competency-based model of skill development and enables the research team to draw upon knowledge from the field of talent development (TD) in sports. Implicit in this decision is the acceptance that the development of expertise is likely to be non-linear, and at times distinctly ‘rocky’ (Collins & MacNamara, 2012).

Furthermore, the MST intervention should be informed by the operational environment in which the candidates conduct themselves. Using my experience as a sniper team leader (on combat operations) and instructor, it must be recognised that in combat split second
decisions must be made, and the focus of the MST training should replicate this requirement, or else this MST intervention would be sub-optimal and potentially unethical: training for operational capability is the goal. Expanding on this, the overarching idea was for the sniper candidates to be “expertise equipped, rather than just competence equipped” (Cruickshank et al., 2020, p. 240), implying it is not about giving the SCs solutions which they are required to mimic, but to provide them with an opportunity to learn and develop their skills, continually throughout their military careers.

To achieve this goal, and following on my own education in professional coaching, I focused on delivering the MST training with adherence to practical wisdom, (as described in Chapter 3), using the Aristotelian principle “phronesis”. More specifically I utilised dialogical learning (Bardone & Bauters, 2017; Eikeland, 2008) as the starting point to generate an epistemological chain that facilitates the implementation of professional judgement and decision making (PJDM) (Collins & Collins, 2017; Grecic & Collins, 2013)

4.4.4 Mental skills training intervention

The timetable for the course is designed to be extremely demanding. Instead of taking time out of the curriculum that has been working very well on present form for years, I discussed with the head instructors before each week commenced where to fit the lectures, so as not to interfere with the practical components of the course.

Making use of the seven-week course, an experiential learning approach (Kolb, 2015), where most of the task is known up front, was formulated to teach the sniper candidates about stress and stress responses and methods of coping. The first step was to repurpose a video I created to teach military cadets about stress - a practical explanation of the cognitive activation theory of stress (CATS; Ursin & Eriksen, 2004) This was followed up by a group lecture on coping responses to stress; how to understand one’s own behaviours to mitigate against negative experiences by accepting stress as part of the learning journey.
In planning and preparing the MST interventions, I took extra care in developing a program that enabled me to focus on the mental skills techniques that have a strong research basis, and inspired from previous research, the “personal performance plan” concept (PPP) (DeWiggins et al., 2010, p. 246). In addition, lectures were practically oriented and focused on the inevitable challenges that arose from the course, and situations of adversity commonly encountered by an operational sniper. All initial lectures followed the same format, a brief session on what the technique is, and how it is used, followed by a round of questions and answers. This enabled the training cadre to possess sufficient knowledge to start working on and implementing that specific technique. I designed Figure 4.2 that overarched all the lessons, because a key factor was providing tools in a system that they were stimulated to develop for themselves:

**Figure 4.2**

*Cyclic model of performance development*

![Figure 4.2](image)

*Note:* Figure 4.2 assists as an overarching concept on where to integrate personal factors for developing optimum performance on the sniper course. The prepare part is being able to develop the specific mental and tactical attributes needed to perform on a specific task, the perform part is to develop key factors for performance on a specific task, the integration part is to accept the performance (optimal/sub-optimal) leading into to learning part and stimulating further development.
4.4.5 Mental skill techniques and classroom lectures

For the SC to “fill in the blanks” the MST training consisted of the following aspects:

Table 4.1

Overview of mental skill techniques on the sniper course

<table>
<thead>
<tr>
<th>Type of skill</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal setting</td>
<td>Adopting a pragmatic approach, where we focused on using process, performance and outcome-based goal setting using the (Specific, measurable, achievable, relevant, timely, evaluate, re-adjust) SMARTER structure (Healy et al., 2018; Kolb, 2015; Locke &amp; Latham, 2006).</td>
</tr>
<tr>
<td>Imagery</td>
<td>Understanding the basics of imagery through the (physical, environment, task, timing, learning, emotion, perspective) PETTLEP model (Holmes &amp; Collins, 2001; Lu et al., 2020).</td>
</tr>
<tr>
<td>Breathing</td>
<td>Learning the basic principles of applied diaphragmatic breathing (Ley, 1994).</td>
</tr>
<tr>
<td>Positive self-talk and affirmations</td>
<td>Learning the basics of how thoughts can influence behaviour, learning to become conscious in how the sniper candidates internal dialogue can increase or decrease performance (Hardy, 2006).</td>
</tr>
<tr>
<td>Relaxation Protocols</td>
<td>The SCs were provided with a very basic understanding of relaxation protocols employed when using mindfulness (Hoyt, 2006; Meland et al., 2015) The first author presented examples of three 5-10 -20-minute applied mindfulness sessions, and recommended that the protocols, or parts of them were used before candidates went to sleep, or in downtime between lectures and training.</td>
</tr>
</tbody>
</table>

In the education component of the course, I also covered Cognitive Therapy’s ABC model (multiple antecedents and consequences influences the behaviour), (Early & Grady, 2017), with a special emphasis on their behaviour (i.e., what they themselves can influence). Focusing on the behavioural aspect of their actions, I asked participants to consider what they manifest when they are performing at their best and to work on replicating those behaviours.
Table 4.2

*Classroom lectures presented on the sniper course in 2020*

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Subjects covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 11</td>
<td>30 Min</td>
<td>Introduction to performance psychology and mental skills training.</td>
</tr>
<tr>
<td>August 12</td>
<td>2 Hours</td>
<td>Goal setting in the context of the course.</td>
</tr>
<tr>
<td>August 14</td>
<td>1 Hour</td>
<td>Developing generic demands for performance as a sniper and individual areas to focus on.</td>
</tr>
<tr>
<td>August 18</td>
<td>1 Hour</td>
<td>What is stress and how does it affect us? (Film produced by author).</td>
</tr>
<tr>
<td>August 19</td>
<td>1 Hour</td>
<td>What have you learned in the first week? Revisiting goal setting, then the MST techniques.</td>
</tr>
<tr>
<td>August 21</td>
<td>2 Hours</td>
<td>Relaxation skills and practice.</td>
</tr>
<tr>
<td>August 23</td>
<td>1 Hour</td>
<td>MST curriculum (see Table 4.1).</td>
</tr>
<tr>
<td>August 26</td>
<td>1 Hour</td>
<td>MST curriculum (see Table 4.1).</td>
</tr>
<tr>
<td>September 2</td>
<td>45 Min</td>
<td>Learning as an experiential process, accept the process.</td>
</tr>
<tr>
<td>September 3</td>
<td>30 Min</td>
<td>How to prepare for a test using MST.</td>
</tr>
<tr>
<td>September 4</td>
<td>30 Min</td>
<td>Guided mental rehearsal, learning about PETTLEP (See Table 4.1).</td>
</tr>
<tr>
<td>September 8</td>
<td>1 Hour</td>
<td>Stress lecture repetition and sharing of experiences in the group.</td>
</tr>
<tr>
<td>September 9</td>
<td>1 Hour</td>
<td>MST curriculum (see Table 4.1).</td>
</tr>
<tr>
<td>September 10</td>
<td>1 Hour</td>
<td>MST curriculum (see Table 4.1).</td>
</tr>
<tr>
<td>September 11</td>
<td>1 Hour</td>
<td>MST curriculum (see Table 4.1).</td>
</tr>
<tr>
<td>September 14</td>
<td>1 Hour</td>
<td>Questions and answers on mental practice.</td>
</tr>
<tr>
<td>September 17</td>
<td>1 Hour</td>
<td>Revisiting individual demands of the sniper. Individual progress &amp; difficulties.</td>
</tr>
</tbody>
</table>

**4.4.6 Mental skills training in the field**

The first couple of weeks we went through the basics of MST, performed as a classroom lecture, where the focus is on teaching technique. The rest of the course is focused on repetition and expansion of the MST techniques, based on a dialogue and focused on the sniper candidates’ experiences. In total I conducted 20 hours of lectures both in the classroom and in the field. In addition, the first author was always present during the course, making
himself available for questions, whilst at the same time providing candidates with the neces-
sary space to reflect on their learning (Kolb, 2015).

No advice or solutions on sniper techniques was provided by me at any stage of the
course. When a question was forthcoming that I easily could have provided a solution to the
problem, I reframed it into a question to assist in the learning process, adhering to the over-
arching philosophy of this case study, especially focusing on learning as a conflict between
what you already know - and the unknown - thus promoting self-efficacy (eg., Bandura et al.,
1999). In sum, I was endeavouring to support them, whilst seeking to afford candidates a
learning experience.

4.5 Data collection

The exploratory case study and interviews (appendix C.1) were all conducted by me
between August – September 2020 and were subject to Covid health and safety guidelines as
directed by the Norwegian armed forces medical service. The interviews lasted between (30-
60 min for instructors) and (45-70 minutes sniper candidates). Each interview (with all partic-
ipants) was conducted in an informal, though private setting. This allowed the interviews to
be structured in a way that enabled respondents to be guided, so that their observations and
thoughts emerged, but at the same time provided them with the flexibility to talk freely
(Braun & Clarke, 2006)

4.5.1 Interviews with sniper candidates

To develop the semi-structured interview questions, I used my own experience as well
as capitalising upon two informal discussions with highly experienced snipers to further refine
the semi structured interview schedule. Each sniper’s interviews (n=8) were conducted at the
end of the seven-week course. In the intervening weeks, a considerable amount of time was
spent getting to know all the snipers on the course, not just the participants. In part, this was
due to the implementation of the psycho-educational lectures and workshops that were made available to all the candidates.

In addition, time spent with and around the snipers resulted in the development of a rapport underpinned by mutual assuredness in the research process and the measures that were in place to ensure confidentiality. Each interview was divided into three phases and commenced with an outline of the format, then progressed by requesting that each sniper pictorially represent their experiences of the course on a graph, as described in the interview guide. This representation included salient moments – both positive and negative.

The second phase of the interview focused on training prior to the course. This phase focused specifically on whether MST had featured in each candidate’s preparation and if so, how this was made manifest.

The third phase focused on each candidate’s perceptions of the sniper course, their performance development, and their use of the psycho-educational MST material that was presented. Due to the flexibility of the interview format, thoughts and meanings arose as the discourse unfolded (Braun & Clarke, 2019). Exemplar questions for the snipers included:

- “How did you experience the mental skills training during this course? What method (s) worked best for you?”
- “Related to the graph you’ve drawn, to what extent did mental skills training help you perform?”
- “Related to performing under pressure: to what extent did the course change or develop your mindset?”
- “In hindsight, what is your most valuable experience on this course?”
4.5.2 Interviews with instructors

Interviews with the instructors (n=4) occurred on three occasions (Figure 4.1) in a group format, covering the same topics over a seven-week period. The semi-structured interview topics focused on performance under pressure; cognition and behaviour experienced under pressure; and mental skills use under pressure (appendix C.1). Exemplar questions for the instructors included:

- “What do you see/notice/hear from those who perform best under pressure?”
- “How can you contrast this with candidates who seem to perform poorly under pressure?”
- “Over the last week, in terms of shooting / performing under pressure, what have you observed?”
- “In which way did you observe or hear anything from the candidates / snipers which suggests they are making use of mental skills whilst performing under pressure?”

The repetitive nature of the questions posed made it possible to go into depth on each area, and the informal group setting made it possible to talk freely about these factors and reflect upon what other instructors experienced.

4.6 Data analysis

All interviews were transcribed verbatim in Norwegian, before a Reflexive Thematic Analysis (Braun & Clarke, 2006, 2019; Byrne, 2021) was conducted. The six phases of data analysis were conducted flexibly and systematically, allowing for lateral movement between stages (Braun & Clarke, 2019). In the first stage, the first author listened to each interview in its entirety on two occasions prior to commencing transcription. At this stage cursory notes were recorded regarding salient details that occurred to the first author. These reflections were recorded and retained in a reflexive journal for the entirety of the study. In the second phase, the first author printed out interviews and placed them on a whiteboard, using marker pens to
underline selected quotes and then coding them. Codes were then assembled into associated clusters. Based on each cluster themes were generated as meanings became apparent across the data. Interestingly, both explicit and latent meanings were discovered which required that respondents’ intended meanings were considered against the first authors’ impression of what was meant. After the final themes were actively generated, the translation process commenced taking extra steps to ensure the core meaning was transferred into English. This then enabled the supervisory team, as critical friends to review the content and offer constructive criticism on the themes identified.

The outcome scores from the course were obtained from the sniper section and presented data from 2008-2020.

4.6.1 Integrity, trustworthiness and rigour

As discussed in Chapter 3, I enacted several roles: I am a former sniper, instructor, and Non-Commissioned Officer with over 20 years’ experience soldiering in the Norwegian Armed Forces. Currently, I am also a performance psychologist in training. Therefore, it is necessary to make apparent my own set of biases in relation to the present study (Levitt et al., 2017). The quality of the delivery was supported through the planning and execution process in the research team. I am interested in the potential of the psychological material utilised to improve the performance and wellbeing of the present set of sniper recruits – and potentially those that follow. However, as a researcher, I am committed to analyse and present the data according to the intentions of the participants. However, while I make my position clear in relation to the data and the participants, my subjectivity – and the tensions that result from having a dual role in the present study are of note. Being both a practitioner interested in the efficacy of curriculum change, while also acting as a researcher designing the methodology and evaluating the evidence, can be viewed as both a vital resource and an asset (Braun & Clarke, 2019; Gough & Madill, 2012). Reflecting this potential negative, several steps were
taken to ensure methodological rigor and enhance trustworthiness. For example, member reflections, where respondents are allowed to read and comment upon either parts of the analysis or their interview transcripts, is often mentioned as the gold standard (Birt et al., 2016; Koelsch, 2013; Motulsky, 2021). The use of a long term follow up was another positive step in this direction.

4.7 Results

I wanted to investigate the extent to which a performance psychology intervention, built on pre-existing grounds, but with domain specific adjustments, could be applied to this special military context. To evaluate the impact of the performance psychology input I examined outcome scores, reactions of participants, perceptions of providers, and used a one year follow up to test the extent to which the knowledge conveyed had proven useful in the field.

4.7.1 Outcome scores on the sniper course

Naturally, there are statistics on the shooting results and pass rates from previous sniper courses. These are course results kept by the sniper section. Notably, the course has changed over the years, with regards to the classification of the different levels describing the sniper, training manuals that evolve and with equipment enhancements for the snipers. In addition, instructors with different pedagogical approaches and experience naturally influence the results. Therefore, direct comparison of results and scores carries some problems. Nevertheless, the statistics present the results, and the 2020 sniper course was the first time MST was included. Furthermore, the demands to pass the course remain the same throughout these years, and the tests are the comparable. The candidate needs to have a 70% pass rate on fieldcraft, and an 80% pass on the shooting component of the course. In the sniper course, there are 135 tests, of which 70 are shooting based (Huse, 2020).
As an important note, in the year of the intervention, 2020, for the first time, all SC’s passed the course. (For the years 2012, -15, -19 no comparable data exist). Furthermore, there seem to be some important variation in performances on the different components. For the years 2016-20, those for which we have data from the shooting portion of the course, shooting scores seem relatively unchanged with 77% in 2016, 84% in 2017, 86% in 2018 and on the 2020 course with MST integrated 85%. The mean pass rate in the shooting component is 83%. However, for 2008-2018 the mean pass rate (shooting scores and fieldcraft scores) for the course is m=43.2%. The lowest pass rate is 27% in 2016, and prior to the year of the intervention in 2020, (with a 100% pass rate), the previous highest pass rate is 67% in 2017.

From 2008-2018 Figure 4.3 indicates a high degree of variability year-on-year. Furthermore, given the emphasis of the curriculum during this period was on a technical / bio-
mechanical model of skill execution, meaning MST was not actively a part of the curriculum. This can be characterised by a high, though variable level of course withdrawal/fail as the mean pass rate is 43.2%. Of interest, in the year of the intervention – where MST was taught and practiced - no course fails were recorded. If this is coincidental, it is at least a happy one!

4.7.2 Perceptions of sniper candidates

Table 4.3

Overview of thematic analysis Sniper Candidates

<table>
<thead>
<tr>
<th>Key themes</th>
<th>Sub themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiences of the MST taught</td>
<td>Developed their own system</td>
</tr>
<tr>
<td></td>
<td>Wide range of MST used</td>
</tr>
<tr>
<td></td>
<td>Positive impacts on performance</td>
</tr>
<tr>
<td>Performance under pressure</td>
<td>Approach to challenges</td>
</tr>
<tr>
<td></td>
<td>Increased self-confidence</td>
</tr>
<tr>
<td></td>
<td>Procedures developed</td>
</tr>
</tbody>
</table>

4.7.3 Key theme: Experiences of the MST taught

The first key theme developed from the thematic analysis describes how the SCs experienced the MST taught on the course.

In the first sub theme, the SCs highlighted how it had assisted them in developing their understanding and subsequent individual approach of using MST
Sub theme: Developed their own system

I try to approach the exams and tests with an empty mind. Attack them when they come. I try not to use imagery too much, because I don’t (know) what is coming anyway. I focus on being present here and now. Then (there) it is not any room for previous poor performances. Only the task ahead of me (Lima).

Another SC has his version:

“At times it’s like my body isn’t where I want to have it. Then I take active control of my breathing for like five to ten seconds” (India).

Notably, however, the SCs developed their individual versions of utilising these techniques, as presented in the second sub theme:

Sub theme: Wide range of MST used

What worked best for me is imagery, at least those tests I have experience with from before. On the tests I don’t know or have little experience with, imagery has not worked for me… When I have managed to take control over my breathing, I have performed better than I thought (Zulu).

He continues to explain his procedure:

I have started each day with the same drill. Removed myself from the rest of the course, I seek some quiet space and visualise. Then I focus on my breathing that calms me down. I turn down my hearing protection and listen to my heart beating. I have been able to drop my BPM from 100 to 50 (Zulu).

Another aspect as exemplified by Foxtrot:

Just saying to myself: Here you got to get a fuc* grip of yourself. It is like a growl. Now, I am doing it like this and this. More talking to myself than visualising it. I’m
doing this, then I walk through it step by step. I was aware of it on one of the tests. My performance started to decline. I did not feel like it was my nerves, I had to speak to myself [knocks his knuckles on the table]. I felt like I got a boost again. Then I performed well.

Foxtrot uses self-talk combined with controlled breathing. It not only prepares him for action, but also helps him refocus when he experiences his performance declining. All the SCs utilise their own system.

**Sub theme: Positive impacts on performance**

In the last sub-theme, they all agreed on the importance of integrating a performance psychology package in this type of education, although it may not provide immediate results:

This supplement to the, the mental stuff, belongs very much on this course. It has helped me to relax more maybe. And even if I’m not quite there yet with all the stuff you are talking about, I want to get there, and I have a strong belief that this works (Mike).

An example from SC India:

It has enhanced my thoughts and experiences I had from before. But now I have a deeper understanding of it, and it has become a more usable tool than before. Things I used to do from before was put into a structure (India).

He describes how he has developed his understanding and through his learning process it has become a tool that is more available to him. Furthermore, he exemplifies:

It has helped me distinguish between the factors I can influence and not. Changed my focus on what I spend energy on. It’s tempting to say, my gun is off, I have a bad day. I force myself to think what I do wrong here. This is where I need to focus (India).
4.7.4 Key theme: Performance under pressure

The second key theme that was generated, also consisted of three sub themes. It seems that the SCs became more aware of how pressures influenced their performance and what they could individually do to mitigate it, in the first sub theme:

Sub theme: Approach to pressure changed

It is the amount of pressure you put on yourself. It’s like, I’m not going to be worse than anybody else. Just get into it and do what you have done 1000 times before. Nothing new, but just focus on the tasks ahead. I think I was more result oriented before, but now I focus more on the process itself (Golf).

SC (Sierra) describes how the MST training helped him, when he had to retest one of the exams to be able to pass the course:

I have learned a lot from that breathing stuff. I think it saved me when I had to retest one of the final exams. I had this one test: it’s been my Achilles heel. So many thoughts running through my mind, doing dry fire practice before we get the order to load our weapons, completely calm. But then my heart immediately - it starts to pound, and my reticle [what you see in the riflescope] shakes all around the place. So, breathing and where to put my mind during performance. I have done some imagery from before, and I think that helped me.

Furthermore, the SCs especially identified the aspect of increased self-confidence and how important this is as a psycho-behavioural skill:

“My self-confidence has improved, not necessarily because I am a better sniper, but because I have changed my attitude towards performance” (Lima).
Golf describes his experience:

You hit spot on (sic) in one of your lectures, on identity. Because this course means so much to me that it has become my identity. And then when I doubt myself, I don’t hit that target.

*Sub theme: Developed procedures*

In the last sub theme the SCs stressed the ability to develop their own set of performance enhancing procedures to be able to focus cognitively on important aspects for their performance. As exemplified from SC India:

The first thing I do in the morning is attaching (sic) my suppressor, find my bean bag and hearing protection, and while I walk to pick up my ammunition I start on my breathing process, so, I feel myself calm down while I fill my magazine. Then I stand behind the gun, move into position, feet apart, move into my gun, get it into my shoulder, all of this while I breathe calmly, take off the scope protection, adjust the beanbag, while I breathe ouuuuuuuuuuuut. I am mentally in a calm state. Then I am ready (India).

Another SC describes his procedure:

“I am looking down on myself in a way, I imagine I lie in a position, take the shot, then I go back into myself and look through my scope, picture myself hitting the target. That imagery exercise we did, I found like a really calm state, I was super nervous when we started because it was a retest of CBL, last chance. And then I was able to get into my zone, and I shot my best CBL ever” (Sierra)

The way the SCs describe their procedures vary: “This keeps me composed now that I have been introduced to putting it into a system. And I believe it has made me more conscious of how I am going to use it” (Victor).
4.7.5 Perceptions of instructors

Table 4.4

Overview of thematic analysis instructors

<table>
<thead>
<tr>
<th>Key themes</th>
<th>Sub themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference in strategies from SCs</td>
<td>Types of MST observed</td>
</tr>
<tr>
<td></td>
<td>Learning and development of confidence</td>
</tr>
<tr>
<td></td>
<td>Reflective skills</td>
</tr>
<tr>
<td>Optimal versus sub-optimal performance</td>
<td>Attentional control</td>
</tr>
<tr>
<td></td>
<td>Cognitive overload</td>
</tr>
<tr>
<td></td>
<td>Developing a combat mindset</td>
</tr>
</tbody>
</table>

The instructors had been able to focus on observing the candidates over a long period of time. Interestingly they collectively agreed that the MST package had improved the SCs performance.

4.7.6 Key theme: Difference in strategies from sniper candidates

This key theme is also developed from three sub themes, in the first sub theme differences in how the SCs utilised MST is observed:

Sub theme: Types of MST observed

I feel, it was yesterday when I thought about it. I observed on the Cold Bore Level test [one of the tests that are considered very demanding because of the repetitive nature] and for the first time I heard and observed that the guys were doing those breathing techniques. It was obvious yesterday that they breathed very well. I have not noticed that before (Blue).

Being able to observe a change in the SCs behaviour is interesting. Blue continues:

“It’s hard to say what puts the SC in the top and further down the list, but what I can observe is the SC who takes the time to do breathing exercises and imagery before a task, performs better” (Blue).
At the same time, it seems that accepting that the course and subsequent experiences were a learning process acted positively on the SC’s overall confidence. In the second sub theme, aspects regarding learning and subsequent development surfaced:

**Sub theme: Learning and development of confidence**

Confidence in one's own skills, awareness of one's own limitations, do not blame everything else, instead acknowledging that this is a learning process. For example, it wasn't a 100 (score) here, I misjudged the wind, but I observed and recorded that the wind can be like that. Learning. Tools in the box. Some (SCs) are very different there. Some are just, sh*. fu*. While some are like, oh can it be like that too, that openness. It's just to acknowledge that experiential learning, I must (go through) do that to learn (wind). Someone excels with a good ability for it. Embrace the learning as opposed to other things (Red).

Furthermore, “One example is a sniper candidate who has claimed ownership and shows it through his actions. He has taken the feedback and done something with it. And it shows, both in his scores and his behaviour. His results are his own doing” (Blue).

In addition, based on instructor observations, the way the top performing snipers were able to reflect, evaluate and adjust their actions seems to be imperative for their overall results:

**Sub theme: Reflective skills**

They can lose control, but those who seem do the right things has a higher baseline (of performance). Maybe one bad result, but the total is better, it is often that they take the defeat as a learning arena, on an equal footing with the fact that they were praised for doing well. For example, now it went well, the feedback has been taken, then the same mistake rarely happens twice in a row. In a way, they take the defeat as learning in the same way as sitting in the classroom and getting a lesson on ballistics or whatever.
And learn something from it, instead of thinking, now it's gone to hell, now we're on a bit of a slippery slope in a way.

All four instructors developed this statement. When it comes down to the final theme, several interesting factors were developed:

4.7.7 Key theme: Optimal versus sub-optimal performance

Clearly, the cognitive skill of refocusing is a clear performance indicator. Perhaps unsurprisingly, the ability to accept responsibility for their own performance was an important factor, together with how the SCs approached the mental load this course presents:

Sub theme: Attentional control

“They guys who perform well on the evolutions are the ones who can focus on the tasks they have ahead of them, and not the prerequisites” (Blue)

In addition:

For example, one SC noticed that his steel target is a bit perpendicular to his position, and he puts all his effort into that issue instead of focusing on hitting the target. Another SC, at the same target, doesn’t make a big deal, just pling, pling [steel target resonance] and passes the test (Gold).

Sub theme: Cognitive overload

I just think, that's just the way it is with some people, some get tired faster than others and... others just, what can I say, give more of a d* and don't think about it so much, while others think about it more. Now I'm tired, now I'm bored. Now it's almost over. I think it is individual, yes (Blue).

In addition: What I see repeatedly on sub optimal performances is the focus on the problem instead of the solution (Red)
Finding excuses seems to be an easy route to take instead of being able to focus on their skill-set, and it is clearly observable through the SCs actions:

“Those who perform on the top level are in the moment, they just hit the target. It is fascinating to watch, their physiology, who wants this the most, hitting that d** target” (Grey)

Lastly, the ability to understand what they are training for is operational capability seems to be a very important factor. The mindset of what the job entails, based on the instructor’s observations:

**Sub theme: Developing a combat mindset**

To be able to correct quickly, to correct for a miss, why is it important, I used the example then that we don't train to lie down shooting steel targets, that's why, we train to shoot other people, what is natural then is, when you shoot you move, shoot back or do something else. Therefore, it is in addition to for example wind adjustments, to be able to make corrections quickly. When I used it as an example, it seemed as if a light switched on for several of them (Gold).

Possibly, the shift in mindset observed might change the perspective for the SCs who embodies this approach and can lead to an improved focus on their task(s).

**4.7.8 Member reflections and 1 year follow up**

Such a long gap is uncommon in qualitative analysis but, I would suggest, essential in cases such as this where people are prepared for challenging contexts. In short, they are only able to comment on the impact of their new skills when these have been field tested. Of the snipers, five out of the original eight respondents opted to answer. The first questions were “Now, 1 year later, what, if any mental skills techniques do you still use”?

One sniper had been deployed and, as such, had tested his skills from training in the most difficult situations:
When the rockets landed around us, and the counterattack systems thundered like he*, I used a breathing technique to not get too influenced by the surge of adrenaline. It kept me at a level where I was focused and ’switched on’, but not in the black zone.

When we got to the area of the rocket impact and I had to sit down to treat people, I used visualisation techniques. Gather the information I had about the place and imagine the worst possible scenario. Create a mental picture of what may meet me at one point of impact (India).

Interestingly, the other snipers described employing a combination of skills from the performance psychology curriculum,

Mainly it is the breathing techniques that I have taken with me and that I use actively. It helps me both with the purely physiological aspect of calming my heart rate and reducing my stress by shifting my focus from external factors that cannot be influenced to the breathing that can be influenced. Otherwise, I use a lot of visualization when training individual skills. This happens quite unconsciously and without me having any system behind it (I imagine before I do) (Mike).

The graduate snipers used their learning both in performance scenarios but also in life in general.

“In addition, self-talk as a confidence builder has become a bigger part of life, both in and outside of work” (Zulu).

Over to the next question: To what degree do you think the integration of the MST contributed to the results on the course?

“I think the mental training has had a big impact on the pass rate of this course and question the fact that this is not part of a specialist's sniper kit, as a standard” (Mike).
The other respondents voiced similar opinions. They described how parts of the performance psychology package assisted them with performance on the course, especially in critical moments, maintaining or regaining focus and performance, and that they collectively agree that the course was perceived holding a higher standard with this addition.

I think it is difficult to say to what extent the mental training affected the pass rate. I know for myself that I got better scores on several shooting exercises due to the mental tools we were given, and I think the course was much better because of the mental training (Mike).

4.7.9 Follow up with instructors

After the follow up was completed with the snipers, the feedback was integrated, and a draft of this chapter was presented to the instructors via email. The instructors were invited to comment on whether the report was reflective of their experiences from the course, and if they had anything they wanted to add. Input was obtained through individually arranged telephone calls, so they could voice their opinions of the questions presented. They universally agreed that the integration of performance psychology techniques was a positive and necessary contribution to optimise not just the course, but the eventual performance on operations, too. They highlighted the positive effect on talent development they experienced when the focus was placed on the overall learning process, not just the results. In addition, Grey explained “That the research made practical sense and when I read the interviews with the snipers, I recognise my own mindset”. He stated that he wished he would have had the MST tools when he went through the course. Red specifically highlighted: “It was very interesting to read and matched my own perceptions of what was going on”. Lastly, all instructors highlighted the experience from Iraq, with (India) as an excellent example of real-life skills employed. They were reassured that he was able to utilise the skills he learned on the course.
4.8 Discussion

The main objectives in this research were:

1. Examining the efficacy of a bespoke MST programme, based on pre-existing grounds, with domain-specific adjustments applied in an advanced sniper course.
2. Investigating the participants' perceptions of useful programme elements.

First, and against my primary objective, it is important to recognize that the intervention showed positive outcome on all four measures used: quantitative data from the results, interviews with SCs, interviews with instructors, and the follow up. Moreover, the SCs perceived MST as a valuable contribution to the course. Indeed, each SC pinpointed the type of situations in which he might use a certain mental skill, based on their individual approach and learning experience.

Looking at the data and compared against the most recent courses, a pass rate of 100% was accomplished in the 2020 version with MST integrated in the course. Extracting the shooting data only, the results are stable over the years (2016-20), also when MST was included in the curriculum. When the significant component of fieldcraft is included, the comparable data (2016-2018) displays a mean pass rate of m= 43.6 % on the course. There are too many variables in an uncontrolled environment (instructors, manual, equipment changes etc.) to draw any definite conclusions. However, shooting is a bio-mechanical skill which, if you practice enough, you get better at (Laaksonen et al., 2018). For a sniper, being able to perform this skill is of vital importance. But compared to sport related shooting we would contend, that the context is extreme. In the sniper course, the results pay tribute to the competency of the instructors in teaching their students. On the other hand, in fieldcraft and combined tests, where the instructors are not there to directly assist and teach, the SCs must rely more on their own decisions, related to self-confidence. The data can indicate the importance of the cognitive and metacognitive aspects (Veenman et al., 2006), the requirement to think and perform
under very high levels of pressure individually, is one area where the MST interventions have an impact as the SCs describe their developed performance under pressure. This can be explained by the fact that “Either you are capable of planning your actions ahead and task performance progresses smoothly, or you don’t, and your actions go astray” (Veenman et al., 2006 p. 5). In addition, the SCs development of their own personal performance plan (Dewiggin, 2010) can enhance their metacognitive capacity. It is difficult to explain the exact patterns, based on the analysis it is a result of the comprehensive context-specific MST approach rather than a single skill. For an operational sniper, the ability to maintain cognitive control cannot be overstated. Being able to make the right decision in extreme circumstances demands high levels of cognitive and decision-making skill: each of the shots fired, or the shots not fired, requires to be justified (Bar & Ben-Ari, 2005, Chapter 1).

There is a clear pattern of how differently the snipers approach their own performance, enhancing the statement from Hamilton et.al., (2020), that it is context dependent. Furthermore, that each SC has their own method of approaching the challenges at hand. On the one hand this could be directly linked to the philosophical approach of how MST was taught during the lectures, through the concept of developing adaptability (Ward et al., 2018). We explicitly focused on creating the building blocks to become experts in the field, focusing on teaching them the how and why of performance development, not just the what’s or basic competencies (Cruickshank et al., 2020). Of course, this difference in approach could also be ascribed to the natural progression resulting from the course. However, based on the analysis there seems to be a clear and positive relationship with what this cohort of snipers have been taught, how they developed themselves (Kolb, 2015), and how they increased their self-efficacy during this period (Bandura et al., 1999).

Based on the difference in prior military and MST experience amongst the SCs, it is natural that the ones with less experience have more to learn, and this can be described as
moving through stages on the novice - expertise continuum (Dreyfus & Dreyfus, 2005). Our claims for causation are reinforced by the fact that several SCs explain how they have basic knowledge of the techniques from before but that, supplemented by the content of this course, they were able to build the skills into a cognitive framework. This occurred, even if they did not yet have the experience, or complete mastery of the mental skills. An explanation for this is that a procedural skill is coupled with declarative skill (Ten Berge & Van Hezewijk, 1999).

My approach, equipping them with the methods needed to become experts, is well supported by research (Cruickshank et al., 2020) and underlines the importance of a philosophical foundation to teaching these methods (Bardone & Bauters, 2017). Of course, since there was no control group, it is premature to draw any definite conclusions. However, based on the analysis, the large individual difference in what MSTs were used, and how participants contextualised it on this course shows promise towards creating a basis for teaching MST in this context.

Of relevance, each SC utilised different methods from MST and supporting instructor observations. Imagery, using the PETTEP model (Holmes & Collins, 2001; Lu et al., 2020) was preferred among all SCs. In addition, diaphragmatic breathing (Ley, 1994) was stated as the most widely adopted and readily applicable MST covered. On the one hand, jumping to conclusions and extract imagery and breathing as the only optimal solutions, as these were preferred by the SCs in this course and downgrade or disregard the other mental skills is a potential pitfall. As an example, the use of mindfulness-based approaches has a strong research base -also in the military (Nassif et al., 2021). Based on the analysis, relaxation protocols (see Table 2) were not favoured by the SCs in this context. Relaxation as a skill probably takes a longer time to learn and in an intensive sniper course, it is probably not the best place to measure outcomes. On the other hand, different relaxation protocols probably impact performance positively, if `only` through increased quality of rest and sleep.
Based on the instructors’ observations, supported by the SCs experiences, improvements in performance were perhaps due to more than just a single “skill”. It appears that a genuine change in mindset occurred, towards a combat mindset (Boe et al., 2020; Smith et al., 2020) meaning one where participants can contrast perspectives, and weigh up the optimum blend for each challenge. In the context of becoming a sniper, perhaps leaning towards achievement motivation, demonstrating a higher ability to perform (Nicholls, 1984). Following the ABC model “we don’t see what it is: rather we see what we think it is” (Early & Grady, 2017, p. 43): this enabled the SC to actively make a choice on where to put effort regarding his performance. Interestingly, when the SCs experience doubt regarding their own capabilities, this leads to a downward spiral - degrading their performance and resulting in difficulty utilising the mental skills they are familiar with but have not yet fully embedded. In contrast, and as a growing feature as the course progressed, SCs who act towards what they can influence, rather than ruminating and experiencing a dip in self-efficacy, are able to employ the mental skills more fully to be present in the moment, especially breathing (Ley, 1994). This in turn enables the SCs to maintain a higher degree of attentional control (Eysenck et al., 2007) and retain a high level of “skilled intuition” (Cruickshank et al., 2020, p. 245), which is vital if decision-making is to be of a high standard in natural environments, following the Recognition-Primed Decision (RPD) model (Klein & Wright, 2016).

Finally, the follow up data provides narrative evidence that learning has taken place, skills were applied in an extreme setting and as described in the development of the interventions, namely “expertise equipped, rather than just competence equipped” (Cruickshank et al., 2020, p. 240). Self-talk was also put forth as developing confidence in wider aspects of life. Instructor comments supported the authors initial analysis, and that MST has its place on a sniper course.
4.8.1 Limitations

Of course, the study is not without its limitations. I have not used a control group, although comparisons to previous years on an almost identical course (minus the MST) does go some way towards addressing this. Similarly, much of the work is based on self-report data, and the expectancy effect of the interventions must be allowed for. However, triangulation of SCs perceptions with performance data, instructor perceptions, and the delayed follow up have hopefully gone some way to addressing this shortcoming, too. Furthermore, the relationships and challenges of sniper teams working in pairs (Orasanu et al., 2008) have not received any attention in this investigation. As a final note, the philosophy, pedagogy and teaching MST in this course is not standard in the NAF, meaning the novelty of the interventions itself could have influenced their motivation and interest to perform. All these issues notwithstanding, further research in this very challenging and unique context is certainly warranted.

4.9 Summary and next steps

Acknowledging that testing interventions in a real-world context is challenging, this is also where elite soldiers and operator’s train. Where the elite soldiers and operators are expected to perform are even more “in the wild” (Chamberlain et al., 2012). Therefore, I believe that conducting context and culturally specific case study research on a small, special population is important to move the field of performance psychology further (Chapter 2).

The chapter has described the relationship between the implementation of a mental skills training curriculum and subjective improvement in snipers’ performance. Data on almost identical courses up until 2020 is outlined and provides an indication that the integration of a performance psychology package with MST could improve performance. This contention is unanimously supported by the instructor’s observations. Furthermore, the SCs descriptions of the performance psychology package provide an insight into the previous intangibles of de-
veloping a form of `tactical wisdom´, individual strategies of performance and decision making. Interestingly, but not necessarily surprisingly, I saw that both the philosophy and methods of delivery for MST plays an important role. Perhaps the key takeaway is that this context and culturally specific and comprehensive MST intervention shows positive results on performance development. Furthermore, adding a well-planned performance psychology package could improve the overall learning process through increased awareness and space for individual applications of the skills taught. It is not to function as some sort of “magic potion” that solves all problems, it should be a natural part of their training and education.

For the sniper candidates specifically, the introduction and implementation of MST provides a positive impact on all performance markers associated with this course. The follow up indicates that they also learned and retained the skills developed well enough to function in combat situations. On the outcome scores of the course, no conclusions can be drawn but the results were positive in the 2020 intervention. Further quantitative performance and psychometric data, including a control group is warranted to understand more about what the optimum intervention model can look like. However, I believe that my research presents a concept that can be implemented and developed further.

In the next chapter, I move from a field well-known to me, to an unknown field. I investigate the effects of applying a common research tool, namely ACTA to gain insights into the cognitive challenges faced by SOF personnel conducting parachute insertion.
Chapter 5 - Commuting To Combat: Investigating Cognitive Demands in High Altitude High Opening (HAHO) Parachute Insertion For SOF.

5.1 Introduction

5.1.1 Overview

In the previous chapter the integration of performance psychology techniques through implementing MST in an advanced sniper course was investigated. As the previous chapter looked at applications to a SOF ‘core skill’, I wanted to research a very specific skillset, representing higher task complexity than marksmanship (the motoric element of sniping), but retaining an inherently high challenge towards the extreme end of the spectrum. This chapter was also designed to consider how common psychology research tools could usefully be combined with experience to develop training applications. In short, aside from testing the implementation of a bespoke performance psychology package within a general skills development course, what means can we use to evaluate the use of performance psychology tools in a hyper-dynamic, though typical SOF environment?

5.1.2 Purpose of the investigation

There is a gap in the research when it comes to understanding more about the cognitive demands for the operators performing HAHO. Importantly, this puts the skills described in context with the demanding job of a SOF operator. Consequently, the objectives of this investigation were:

1. Investigating the use of ACTA as a way of understanding context specific demands of a complex task for SOF: High Altitude High Opening (HAHO) parachute jumping.
2. Identifying possible training applications using performance psychology.
5.1.3 Military parachuting

In the Norwegian Armed Forces, military freefall (MFF) has been taught since the early 60’s enabling the current instructor wing to constantly develop the training methodology up to the present day. As discussed in Chapter 2, SOF conducts advanced infiltration techniques and methods to gain access into (usually denied) geographical areas. One of the methods utilised, shared with conventional (GPF) elite units is MFF (Chapter 2). Military freefall is divided into two categories: High Altitude High Opening (HAHO), and High Altitude Low Opening (HALO). HAHO insertion is used to fly the parachute over long distances towards an area where it is deemed appropriate to land, the designated Drop Zone (DZ), whilst HALO is used more directly over the same type of area, as the operator’s freefall almost directly over the DZ. Because of the altitude involved >18.000 ft (Clemente-Suárez et al., 2017) the operators jump with oxygen systems. Furthermore, because of the extreme temperatures encountered, special clothing and other kit are essential. In addition, SOF can conduct jumps with cargo (bundle jumping), tandem passengers, dogs and, of course, all the equipment needed (communication, weapons, ammo and other essential gear) to conduct their mission once they reach the ground. Depending on the altitude they exit the plane at, called the High-Altitude Release Point (HARP), the free fall portion of the HALO jump comprises a descent to about 6-4000 ft Above Ground Level (AGL), reaching terminal velocity (203 km/h) named Indicated Air Speed (IAS), before deploying the parachute. The actual speed will increase based on jumping altitude. Adding the windchill factor, this informs the unit about the equipment needed to ensure the safety of the jumpers. However, in HAHO the typical freefall lasts only <15 seconds. Both HALO/ HAHO are specialised skills and are considered advanced infiltration methods. In HAHO, the operators can fly under the canopy up to 60 km, navigating in their stack towards their designated DZ. In HALO, the operators have a shorter timeframe (4-
5 minutes) to decide appropriate landing patterns. Because of these factors, for both methods of infiltration, the cognitive demands are certainly towards the extreme end of the spectrum.

5.1.4 Military parachute jumping as a research arena

Parachute jumping in general appears quite frequently in research, with about 48,000 results returned from inserting “parachute jumping” on various search engines. Move to “military parachute jumping” and there are 30,400 results. Narrowing the search down further to “military freefall+cognitive demands+HAHO+HALO” there are only 13 results, most of which are concerned with different psychobiological, psychophysiological and medical factors (Clemente-Suárez et al., 2017; Ottestad et al., 2018).

To draw an historical timeline, as early as 1978, the book Psychobiology of stress, a study of coping men was published (Ursin et al., 1978). In this book, thorough research was presented on “behavioural and physiological parameters following repeated exposure to a distinctly threatening situation” (Ursin et al., 1978, p. 3). The researchers conducted a study on static line parachute jumping (the parachute is pulled out from a line when the soldiers exit the airplane at altitudes between 6-900 feet Above Ground Level (AGL) at the Norwegian Army Parachute School. Participants (n=74) were investigated on a 14-day parachute training course in 1974. Researchers measured psychological and physiological responses to stress and concluded that “coping has taken place” (Ursin et al., 1978, p. 201). This is, to date, the most comprehensive research conducted on military parachuting with regards to stress and coping. Moving to the present, however, there is only one peer-reviewed article on HAHO/HALO from Clemente -Suarez et.al., (2017) where they investigated the physio-psychological demands of military freefall (MFF - Chapter 2). The authors highlight that their research is novel, confirming my initial investigations.
In the 43 years which has passed between these investigations, and although the first investigation was conducted on the most common approach of static line parachuting, one important conclusion is shared and replicated. Namely, that there is arousal/activation present before a parachute jump, and this activation decreases with experience (Clemente-Suárez et al., 2016, 2017; Ursin et al., 1978). This refers to a natural response, which can be described in several ways. However, the Cognitive Activation of Stress Theory (CATS), (Ursin & Eriksen, 2004) describes how we notice an alarm. For example, you are about to jump out of an airplane for the first time. If the parachute does not function properly, the risk of serious injury or death is present. How impactfully this alarm - activation is experienced is based on individual factors; for example, how an individual interprets the situation. After a couple of jumps, usually the activation decreases in strength, because familiarity with the situation increases, and coping takes place (Lazarus & Folkman, 1984; Ursin & Eriksen, 2004). Albeit informative, this conclusion offers no surprises, and parachuting in general is often brought forth as a field well suited for research on different aspects of stress and coping as “freefall requires personal mastery to overcome a substantial perceived risk” (Samuels et al., 2010, p. 118). Furthermore, due to the perceived (and potential) danger involved in MFF, and in relation to the complex skillset required to perform the activity safely, my hypothesis is that it could provide additional knowledge on how to integrate bespoke performance psychology training for SOF.

5.1.5 Naturalistic decision making

The start of NDM is traced back in its infancy with examining master chess players’ strategies of performance in the post war 40s, and how these masters developed a clear superiority in discovering options that mediocre players had not even realised was possible (Kahneman & Klein, 2009). Years later Klein et al., (1986) studied how fireground commanders “make decisions under conditions of uncertainty and time pressure that preclude any
orderly effort to generate and evaluate sets of options” (Kahneman & Klein, 2009, p. 516). With these findings the Recognition Primed Decision (RPD) approach to human decision making began to develop (Klein & Wright, 2016).

Notably, it was not after the Tactical Decision Making Under Stress workshop (TAD-MUS), following the USS Vincennes incident in 1989, where a commercial Iranian Airliner was mistakenly shot down perceived as an attacking F-14, that Naturalistic Decision Making (NDM) was born as a concept for military application. At present “NDM research provides a perspective, methods, and frameworks for designing to support decision-making in a range of complex environments” (Militello et al., 2015, p. 253). Nevertheless, there are other constructs in decision making as well; for example, the heuristic and biases (HB) model. “In sharp contrast to NDM, the HB approach favours a sceptical attitude toward expertise and expert judgment” (Kahneman & Klein, 2009, p. 517). In short, this standpoint indicates that even experts are prone to errors but that, through an awareness of bias, these errors can be reduced. As an example, Kahneman coined the term “illusion of validity” (Kahneman & Klein, 2009, p. 517), referring to an interview situation where the rapport was good through shared values, but it does not necessarily present a causality as the best candidate being chosen for the job. Even so, based on mutual efforts to discuss decision making, these two approaches share more similarities than differences in their research on decision making “failing to disagree” (Kahneman & Klein, 2009).

On the opposite side of the spectrum there are the analytical models of decision making, where Recognition Primed Decision (RPD) making is regarded as sub-optimal at best (Tremblay et al., 2017). Based on these different theories, I would contend that the task, situation, context, timeline and perceived individual levels of stress involved – are all important factors to consider. Decisions are certainly context dependant (Ursin & Eriksen, 2004): over several years, the initial RPD findings were replicated in several studies (Klein & Wright,
Therefore, and reflecting on these considerations, the ACTA method was developed from NDM/RPD research and would be a good fit as a framework to investigate the cognitive demands associated with HAHO.

To summarise, based on previous research on specialists (Militello et al., 2015; Parisi & Nathanael, 2019; Roberts et al., 2016), novel insights could result from an ACTA study focussed on the cognitive demands of the operators - specifically HAHO. Furthermore, based on my previous research (Chapter 2 and 4), due to the perceived (and potential) danger involved in MFF, this study could provide additional knowledge on the integration of a performance psychology package for SOF.

5.2 Methods

5.2.1 Research design

NDM (Klein, 2015) is the study of how experts’ intuitive decision-making processes occur in real life and presents the theoretical foundation for my method of Cognitive Task Analysis (CTA), namely the ACTA, (Militello & Hutton, 1998). This method was chosen for this investigation to specifically investigate the cognitive demands in HAHO (Chapter 3). However, based on previous research (CTA institute, 2023) ACTA is normally conducted as follows:

Step 1) Interviewing Subject Matter Experts (SME) on the most important tasks and developing the task diagram (TD) (normally 3-6 steps)

Step 2) Performing a knowledge audit (KA), a set of questions and probes to understand and elicit domain specific knowledge. And if necessary, an optional 3 step is conducting a simulation interview (SI), where a simulation of a challenging scenario is presented to the SME. The analytical product is a cognitive demands table (CDT), which can be presented in different ways. However, in my particular case, involving the novelty of my research and my own lack
of knowledge in HAHO, I needed to make some adjustments to best fit my context of research:

5.2.3 Modified ACTA

Against my general objective, the use of ACTA represents a pilot test application of an approach which could be used for several SOF-specific skills. I chose to adapt existing methods because of the novelty of my research and opted for a version of the CDT. This was developed as a combination between the KA and tailoring the CDT to the context; for example, “common errors” are often used in CDT (Militello & Hutton, 1998, p. 1625). Common errors are not a good fit in the HAHO context however, as it has an unsurprisingly negative connotation. A “suboptimal performance” column was created, as it is fitting with a skill acquisition continuum as well (Dreyfus & Dreyfus, 2005).

In addition, I wanted to test my understanding that the motor learning and control perspective was an important factor. In the novice stage, the motor learning aspect demands more cognitive effort than in later stages on the skill spectrum, when the motor skills are automated (Kahneman, 1973; Magill & Anderson, 2014; Servant et al., 2018). Therefore, investigating cognitive decision making was important to conduct towards the expert part of the spectrum. In addition, all operators had undergone selection and completed the basic SOF training pipeline. MFF is considered a specialty task, requiring more training on this specialty to be able to conduct these insertions, placing them in an air troop within a Sabre squadron.

As a common feature of the military approach, MFF/HAHO is comprised of a lot of set procedures, (exiting the plane, pulling the release cord at the correct altitude, navigating, report on comms and emergency procedures; actions on in flat spin during the free fall phase, chute not flyable etc.). These procedures are based on stimulus/response closed motor skills and are drilled into place using the overlearning concept (Magill & Anderson, 2014, p. 408). I opted to move beyond these to invite the operators to present cognitive judgements, which
also presupposes that they need to be at an adequate proficiency level to be able to answer the questions, in line with the ACTA method (Militello & Hutton, 1998). To give an example; ‘You exit the plane, and when you reach your release altitude and pull your release handle, nothing happens. What do you do?’ Most likely answer: ‘I pull my alternative release handle’. And following that: ‘That does not work, what do you do then?’ Most likely answer: ‘I pull my reserve parachute’. So much for cognitive judgements. As described, to move beyond motor skills and engage cognitive elements in this task, eliciting expert knowledge from the training cadre was crucial to present a trustworthy ACTA. I developed the ACTA (Militello & Hutton, 1998) method to fit my specific investigation.

To summarise, I used a combination of observation and participation in all aspects of the activity and drawing on E1 and E2’s expertise within the field I developed a tailor-made procedure to elicit the information necessary to answer my research questions. The product was a version of the CDT fitted to both the context and the research questions (Militello & Hutton, 1998, p. 1624).

5.2.4 Participants

Ethical approval was granted from the university together with local permission from NAF. The information sheet and consent forms were shared prior to and signed before the interviews commenced. All the participants are volunteers, and thorough briefs on their rights were provided both orally and in writing.

Lead instructors from the training wing (n=2), (E1 & E2) age (M=37) and jumps (M=2250) participated in phase 1, and member reflections, placing them in the expert bracket (Dreyfus & Dreyfus, 2005). “An expert’s skill has become so much a part of him that he needs be no more aware of it than he is of his own body” (Dreyfus et al., 1986, p. 30). In addition, these two were the lead instructors in the field, and therefore not only offered access to their own experience, but also expert insight into what it requires to develop a combat ready
MFF operator. Hoffman’s description of a master seems to provide an additional relevant explanation, because they are qualified teachers and regarded by other experts as being “the real experts, especially with regards to sub domain knowledge” (Hoffman, 2013, p. 24).

In the second phase, I aimed to interview operators with a spread in expert competence, with the criteria that they were combat ready jumpers. When the operators are fully qualified (usually around 100 jumps) they meet the unit’s standards as combat ready. Purposive maximum variation sampling (Bryman, 2016) was undertaken by the troop commander in the training wing to access operators with the proper skill level, based on the 5-stage phenomenological model of skill acquisition, placing the operators in the novice - expert continuum (Dreyfus & Dreyfus, 2005). Although critiqued as an oversimplification (Peña, 2010), this approach provides a roadmap to skill acquisition well suited for HAHO. The Dreyfus and Dreyfus stages are: 1. Novice, 2. Advanced beginner, 3. Competence, 4. Proficiency and 5. Expert.

Based on this, operators fully qualified in tactical HAHO night jumps, were invited to participate. The six operator participants (O1, O2, O3, O4, O5, O6) with a mean age of 29 (SD=5.3) in this investigation were serving operators qualified in MFF, with an average experience of 435 jumps (SD=262). This presented an even spread in age and experience, landing somewhere between proficiency: “the proficient performer, while intuitively organizing and understanding his task, will still find himself thinking analytically about what to do” (Dreyfus et al., 1986, p. 29) towards the expert level, where decisions are based on recognition (Dreyfus et al., 1986). Notably and more importantly for my investigation, they had also all received the same kind of training from the novice level. Consequently, all were able to reflect on their own progress and learning, from novice on the journey to expert.

5.2.5 Phase 1

To answer my research questions, after my initial analysis of what I wanted to investigate, I continued to the how. In my analysis of the planned investigation, I decided to conduct
a phase 1 study, as this was important with regards to the quality, given that an ACTA on HAHO is novel (In, 2017). My first task was to conduct informal group conversations together with the training cadre (n=8), to deepen my knowledge about how I could tailor the ACTA. The method serves as a guideline and it is not an off the shelf methodology, that can be applied to all circumstances without proper planning and preparation (Militello & Hutton, 1998). Accordingly, I first presented my overarching ideas for the research and furthermore, described the ACTA methodology. Then I presented the TD, which is regarded as the first phase. It should be a simple overview of the most important tasks, presented in a chronological order, and is recommended to be no more than 3-6 steps (Militello & Hutton, 1998, p. 1620). I explained the KA, which is a questionnaire based on several aspects from the novice-expert literature (Dreyfus et al., 1986; Dreyfus & Dreyfus, 2005; Klein et al., 1989) and that it was possible to conduct an optional 3 step, a SI. A SI presents examples of difficult cognitive tasks that can be presented in several ways to follow up and go more in depth if needed from the KA (Militello & Hutton, 1998, p. 1623). Nevertheless, a day full of discussion left me only with more questions than before. No consensus on the TD was accomplished; all the same, we moved through the Simulation Interview and many possible cases surfaced. I found that very interesting for several reasons. Firstly, although all the instructors agreed on the big picture, interestingly, when they were confronted with the question of the most important phases in the task, they could not completely agree. Secondly, words matter. What exactly is the right sequence and descriptions? Seemingly and based on feedback from the participants, they all enjoyed the process as a group moving to a better understanding of each other, and I got to explain the value of Shared Mental Models (SMM) (Espevik et al., 2006) Reflecting on the day’s events, I revisited my original strategy and decided that, if I would have any chance of getting through the ACTA interviews in an analytical fashion, within an acceptable
timeframe a TD had to be presented to the operators, rather than asking them what they regarded as the most important tasks, as is commonly the first step in an ACTA (Militello & Hutton, 1998). Furthermore, taking this step and presenting a TD enabled me to establish an analytical approach to the interviews that would assist in obtaining the data and presenting my results in a coherent and meaningful manner. Based on the initial response form the training cadre, I decided that I had to build the ACTA process from the TD. Reviewing my notes from the day, I developed a preliminary TD and suggestions to a tailored SI, as the Knowledge Audit is a set questionnaire.

Following my initial preparations, I next spent 3 hours x 2 with the two most senior instructors in the cadre (E1& E2). We went through the complete ACTA process, with the focus of optimising the TD and developing the SI. Most of the time available was spent on refining the simulations, based on real events (Militello & Hutton, 1998), to each of the phases in the TD. Specifically, however, I paid particular attention to the normal spectrum of issues arising, instead of asking, ‘What is the most extreme thing that ever have happened or happens in this situation?’ I deemed it important to ask, ‘Based on your experience, what are the normal issues that arise for the operators during the MFF education?’ This is an important distinction as the scope of my research, investigating cognitive demands conducting the task, and gaining knowledge instead of focusing on a few near-miss cases. Outlier cases are important, but in respect to this investigation they can misrepresent the activity.

5.3 Data collection

5.3.1 Interviewing the operators

During the interviews, as per recommended practice, I recorded the conversation. Concurrently however, I made use of a printed KA table and my version of the CDT to make direct notes into the format, and to keep track of what was said. In addition, I noted specific
comments from the counter display on my Dictaphone, to be able to revisit specific points afterwards.

In the following sections I offer figures and tables used as stimuli, together with explanations.

**Figure 5.1**
*Task diagram HAHO.*

Note: This task diagram represents the 8 phases of a HAHO insertion that was developed together with E1 and E2. All phases are described in the CDT.

The TD is specifically developed and tailored for this ACTA. As mentioned, there are more phases than are commonly utilised. However, there are distinct phases that each present a different set of cognitive demands (Militello & Hutton, 1998, p. 1621). Reflecting recommended practice, these were used to be able to move through the tasks in a meaningful, and sequential way. This was necessary to elicit cognitive demands both in parts and to present them as the optimal solution. To get them started on the interview, I went through the phases
where the operators explained the most important aspect for them, using the phases to warm up for the interview. In addition, I utilised the KA (appendix C.2) where the KA presents a set of questions based on the research as referenced, where each probe is organised to elicit specific expert judgements and calls (Militello & Hutton, 1998, p. 1622) and I designed a tailored SI:

**Table 5.1**

*Simulation Interview HAHO, tailored Simulation Interview questionnaire*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 Ground preparation</td>
<td>You come a day later for the training jumps. Your equipment is on site and on the morning of your arrival, you join the team that was there from the start of the training. You are a little late for the brief due to problems with the equipment. What do you prioritise, and in what order?</td>
</tr>
<tr>
<td>Phase 2 Loaded in the plane</td>
<td>The plane taxis onto the runway, you sit down on the bench and conduct your preparations. What are you thinking about and what is your thought process?</td>
</tr>
<tr>
<td>Phase 3 Enroute to HARP</td>
<td>You get the signal “mask on” and check your equipment. How does that process take place for you, what do you particularly notice about yourself? Do you have any rituals of your own?</td>
</tr>
<tr>
<td>Phase 4 and 5 Exit to flight</td>
<td>Night jump, basic kit: You exit out of the ramp door, and you feel that you are more unstable than you should be. What could be the reasons? What do you do?</td>
</tr>
<tr>
<td>Phase 6 Flight-Navigation-Communication</td>
<td>Night jump, basic kit: Departure from flight level 180, stick on 8 pax, you are jumper no. 5. On the first communication check you discover that your altitude is equal to jumper no. 3. 1500 feet lower altitude than jumper no. 4. The entire stick has the same weight. What do you do?</td>
</tr>
<tr>
<td>Phase 7 Downwind and base leg</td>
<td>Day jumping, basic kit.: After the parachute opens, the height is good, every jumper is where they should be according to the plan. You discover that your two GPS` points in different directions. You see the DZ, What do you do?</td>
</tr>
<tr>
<td>Phase 8 Landing “Scenario from hell”</td>
<td>Day jump, basic kit: You are jumper 1. After flying through the cloud cover and looking at the ground from 4000 feet. You don't recognise the terrain from the brief. What do you do?</td>
</tr>
<tr>
<td></td>
<td>Day jump, basic kit: Communication along the entire reporting line, but now you have lost communication after 10,000 feet with hazy cloud conditions. Altitude 4-5000 feet. What do you do?</td>
</tr>
<tr>
<td></td>
<td>Night jump, basic kit: Hopper 3, Altitude 3000 ft. Lost communication, no update from the stick leader, your height is a bit too high, and you don't have an overview of the direction the other jumpers are landing in. What is your thought process, and what measures do you take?</td>
</tr>
<tr>
<td></td>
<td>Day jump, basic kit: You fly out under the sky ceiling, 3000 ft. You see that the DZ is too far away according to your speed. What is your thought process?</td>
</tr>
<tr>
<td></td>
<td>Night jump, basic kit: Jumper 1, Altitude 1000 feet, foggy NVG, you pick it up and see it's broken. What do you do? What are your assumptions?</td>
</tr>
<tr>
<td></td>
<td>Day jump, basic kit: Very small DZ, you thought the headwind was stronger. What do you do?</td>
</tr>
<tr>
<td></td>
<td>If you were to make a case to really show what HAHO is all about, what would you put in the case?</td>
</tr>
</tbody>
</table>
Note: This SI is specifically developed to target each phase in the TD. Each phase presents a cognitive challenge that are distinct to that phase. Furthermore, they build on each other, especially phase 6, flight, navigation and communication present several difficult cognitive judgements. I opted to present several cases that each is unique, to gather enough data to present a CDT. In addition, a final question was asked with the heading “scenario from hell” based on recommendations from previous ACTA research (Militello & Hutton, 1998) formulated to elicit factors not directly covered in the SI.

5.4 Data analysis

As there are no set methods to analyse the material into the CDT, I utilised the six steps of the RTA (Braun & Clarke, 2019, 2022), as this is “not a baking recipe” (Braun & Clarke, 2019, p. 590). Rather, the structure is there to present a clarity in what is done and how, to uphold trustworthiness and rigor in my research. Furthermore, and as in my previous empirical chapters, I followed the criteria set forth in Chapter 3 in my selection and application of the methods.

Each phase in HAHO represents a higher order theme, and the different columns served as codes. As the questions are distinct to the phases, during the interview I wrote in the (individual) answers in a pre-made table both for the KA and the CDT. Based on the initial notes, I then relistened to the interview, keeping track of each phase and adding additional notes of interest for further investigation. Then I proceeded through each interview and wrote the operator’s answers to the questions. The next step was going through each phase and bringing forth the different answers, collating the information that was the common denominators in the appropriate column. Then, everything was translated to English, making sure to keep the core meaning in the translation. Finally, I backtracked the steps one more time to make sure the CDT represented a causality of my analytical processes.
5.4.1 Integrity, trustworthiness and rigor

As there are no previous ACTA available on parachute jumping, let alone HAHO, I focused on educating myself and preparing the interview materiel (Gore et al., 2018). As explained in previous chapters, I have a long military background within specialist fields. However, MFF is a skillset that is novel to me. In preparing for this investigation, I observed a two-week training module, where I participated as a tandem passenger on 12 HAHO tactical training jumps and received wind tunnel training to understand more about what it takes to become an expert in MFF. I spent time with the ground crew, the instructors, and the operators themselves. I sat in on every briefing, followed the jumpmasters in the plane and worked to understand the different elements, and how it is intended that they be brought together. Using my reflective diary (Braun & Clarke, 2006) enabled me to understand more about the cognitive requirements of this kind of training and, with reference to Chapter 3, adhering to my overarching principle of phronesis (Eikeland, 2008, p. 39) and my own PJDM (Collins & Collins, 2017). This of particular importance as a researcher and performance psychologist in training, conducting research together with, and for SOF. HAHO is a very complex and context specific skill set. To know where to start and to engender trust in the subsequent research findings, as recommended in the “practitioners toolkit” (Militello & Hutton, 1998, p. 1635), a preparatory phase was deemed necessary. To summarise, I self-educated, both in form of participating in MFF training, but also enrolling on an online self-study course on CTA (Chapter 3). In other words, I conducted a case conceptualisation with a special emphasis on the needs analysis of “the performer, the task and the environment” (Collins & Cruickshank, 2023, p. 26).

Other, more conventional approaches were also applied. Member reflections were conducted with the senior experts (E1 & E2) after the phase 1 study in the following format: The
ACTA procedure was tailored and translated into Norwegian and sent via email. No additional changes were necessary, based on the feedback prior to the ACTA commencing with the operators. The second phase of member reflections were conducted as follows; the operator participants were contacted by encrypted email, individually, with the initial codes. Timings wise, approximately two weeks after the interviews were conducted and presented with the CDT. I explained the process in a separate document, that described the TD, KA and SI. I invited each participant to read the CDT and quotes derived from their transcript and comment on what made sense for them; if something did not make sense participants were asked for additional comments. All participants (n=6) responded, and they were satisfied with the CDT as a correct description of their interviews. I then recoded the participants before a third phase of member reflections was conducted with E1 and E2, when the initial draft of the chapter was finished. Making use of their background and experience I sought E1 and E2’s input to sense-check what seemed helpful, and if there was any content or process that did not make sense to them. The chapter was very well received.

5.4.2 Member reflections operators

The combined operators’ experience of the CDT was that it offers a valid and good description of HAHO, and all reported how interesting it was to read what the others say about different challenges. In addition, the process of the interviews themselves inspired a reflection on their own journey: “I am logging three jumps after this interview process” (O3).

5.4.3 Member reflections experts

As one of the purposes was to provide research that could improve on the current training package, I wanted to let the experts voice their opinion about the chapter. When the member reflections were conducted with the operator respondents, the present chapter was compiled, and an early version was sent to E1 & E2 via encrypted email. I asked how it made sense given their background and experience, what seemed helpful, and if there was anything
that did not make sense. Finally, I asked if this research could be used to develop the course package further. After 3 weeks, I received a written response, and followed up with a conversation with each expert individually via telephone. Both experts thought the chapter was very interesting and informative, and the CDT made tacit knowledge explicit on a new level for each phase of the jump. Furthermore, the experts highlighted how the analysis provided a more explicit understanding of what is tacitly happening for the operators cognitively. E1 especially highlighted “the way in which the hijacking of cognitive capacity is described, this is very interesting, and something we will bring with us in training” (E1). In addition, E1 also described “the explanation around the ability to feel/sense what is going on [for instance when the drogue is not functioning properly] contra just running with procedures [looking back to see if it is properly deployed, impossible in a night jump] was very interesting” (E1).

Due to the sensitivity of the research, when member reflections were conducted, the command also read through it, before I could share the end product in whole with my supervisory team.

5.5 Results and discussion

In contrast to the previous chapter, I have compiled the results and discussion sections in to one. Because of the large amount of data, it is more convenient for the reader to be able to follow the results per the jump phases, then immediately be able to continue to the discussion section.

The objectives of this investigation were:

1. Investigating the use of ACTA as a way of understanding context specific demands of a complex task for SOF: High Altitude High Opening (HAHO) parachute jumping.
2. Identifying possible training applications using performance psychology.
As a more general outcome, I wanted to explore the use of psychological research tools to facilitate understanding of SOF challenges.

5.5.1 Results jump phase 1/Ground preparation

Description of the phase: Consist of a jump brief, mission planning and equipment preparations. In addition, certain elements of the emergency procedures are rehearsed.

Difficult cognitive elements: Making the right judgements based on their own level of competence under time pressure.
## Table 5.2

**Cognitive Demands Table Jump phase 1**

<table>
<thead>
<tr>
<th>What makes it difficult?</th>
<th>Suboptimal performance indicators</th>
<th>Expert cues &amp; Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>A lot of information in the brief</td>
<td>Not understanding the most important part of the brief</td>
<td>Extracting what influences your performance at your level, not follow what everybody else do. Ask an “adult” if you are uncertain</td>
</tr>
<tr>
<td>Missing out on vital info</td>
<td></td>
<td>Ask the instructors, based on your current level.</td>
</tr>
<tr>
<td>Simultaneous prep of gear and planning the jump</td>
<td>Losing focus on the details that matter the most</td>
<td>Plan what you need and when to do it – Checklist/drilldown. Invest in mental rehearsals!</td>
</tr>
<tr>
<td>Lacking the experience to understand what makes it a more challenging jump</td>
<td>Adding a piece of kit or changing the config based on what you see the more experienced jumpers do, and not understanding the reason they do so.</td>
<td></td>
</tr>
<tr>
<td>Time pressure</td>
<td>Smart time management</td>
<td>Understanding and admitting your own level of fatigue is a prerequisite to optimum training and subsequent performance. It is not selection. It is training. Don’t try to “stiff upper lip” it!</td>
</tr>
<tr>
<td>Fatigue</td>
<td>Being honest with regards to your own learning potential, and your own limits in an activity with potential serious risk</td>
<td>Be thorough and always do the same. Do not change something you know works; into something you do not know if works just to “test if it is a better configuration”</td>
</tr>
<tr>
<td>Testing your equipment in the right config and remembering to change batteries and load correct waypoints.</td>
<td>Rushing through and accepting that it is ok, without changing batteries and double checking the configuration</td>
<td>Taking the time early on to understand how winds, speed (vertical/drop) and altitude can be judged in flight. In addition, learning to do the math inflight to readjust your plan</td>
</tr>
<tr>
<td>Extracting the vital information about wind, calculating the jump</td>
<td>Not understanding the full impact of what the winds are like throughout the jump and how this may affect the jump, also leading to a sub optimal approach when the winds change drastically from the brief. Fear of letting the team down, unnatural environment and focusing on sub optimal factors</td>
<td>Be open about your emotional state. Everyone has one. Work on ways to mitigate it in a constructive way. The culture is open, but you must ask. The instructors are not mind readers</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Stressing about, trying to everything without a set checklist and plan</td>
<td>Invest in mental rehearsal and calm down waiting for the “bus”</td>
</tr>
<tr>
<td>Knowing what to focus on and the tasks accordingly</td>
<td>Inexperience can cause confusion on whether own judgements are sound.</td>
<td>If in doubt, raise your hand and ask. It is expected of you</td>
</tr>
<tr>
<td>“Yellow lights”? Subtle signs that surface throughout the process, both individually and for the team</td>
<td>Inexperience can cause confusion on whether own judgements are sound.</td>
<td>Test everything on the ground and ask an instructor or an experienced team member. They can help you on the way in your learning journey</td>
</tr>
<tr>
<td>New kit? First time? If jump goes ok it is easy, but with a new thingy or different</td>
<td>Not paying attention to, or not knowing how it can impact your cognition or flying</td>
<td>Same solution as above.</td>
</tr>
</tbody>
</table>
**Discussion jump phase 1**

There are several factors that the expert operators highlight as involving difficult cognitive demands. One was the ability to extract the right type of information that could improve performance under time pressure. Not paying particular attention to the most important factors will most likely lead to a sub-optimal performance. An expert clue presented in the CDT was the ability to make optimal judgements based on the individual skill level of the operator. However, a novice operator, referring to the Dreyfus & Dreyfus (1986) model, “lacks any coherent sense of the overall task” and their “capacity to listen to advice is severely limited” (Dreyfus et al., 1986, p. 22). In this regard, the ideas expressed by Collins and Collins (2017) relate to the immediate categorisation of knowledge seemed pertinent – “Employ, Store or Ignore” (p. 128).

Furthermore, because of the sub-optimal performance indicators that the operators bring forth, there seems to be a causality following this: Fatigue and Ego. Fatigue can be described in several ways, and in this specific context “mental fatigue is mainly caused by time-on-task and cognitive workload” (Balkin & Wesensten, 2011; Wingelaar-Jagt et al., 2021, p. 2). As HAHO is both mentally demanding but also associated with long days, I would argue this is an important factor. On the one hand, there are also individual factors. So, if one operator is having some trouble sleeping at night because of his level of activation (Ursin & Eriksen, 2004), he will probably experience an increased cognitive load going into the training day. This can reduce the ability to learn and follow the progression. However, based on the skill level and the novelty of the task, all the novice operators will experience reduced cognitive capacity at the start of the course package. The first step in mitigating these effects is acknowledging that it has an influence, the second is for the training cadre to monitor this closely. A simple and effective solution is nap time, already used by pilots (Wingelaar-Jagt et
MST techniques such as relaxation protocols through diaphragmatic breathing before the nap could assist in parasympathetic activation (Blumenstein et al., 1995; Gilbert, 2003). However, even if the effects of different meditation protocols are well known (Meland et al., 2015), when a method is first introduced in this context, my own findings suggest that this could increase the cognitive workload, because they still have to be learned (Chapter 4). Therefore, providing the novice jumpers with both individual coaching and group-based relaxation protocols could be a viable option. Another important factor to have in mind, is that ego in this context is not a negative factor, it is what has got them to this stage of their training - the willingness to expose themselves to exacting tasks in challenging environments and learn to thrive there is key in their advancement along the continuum of expertise (Bandura, 1997; Kolb, 2015). Notably, research supports the performance aspect of a sensation seeking personality (Raab et al., 2016; Zuckerman, 1994). Therefore, ego in this context is natural, and instead of expecting neophyte operators to ask for advice, even if the experienced operators recommend that they should. As presented in Table 5.3, the likelihood that will they ask for help can be enhanced through awareness from the instructor cadre. The novice jumpers are not asking for help, because of an unwillingness to do so, but simply because the amount of information to process under time pressure is very high. Perhaps they could be more closely coached by the training cadre (or a performance coach) while they develop their expertise. It is important to bear in mind that these operators are selected, and as discussed in Chapter 2, it is not always some of the factors that help you through selection that are necessarily the ones you need for optimum performance. Hence, being honest about your level of competence and asking for help is highlighted from the experienced operators as an important expert cue. Furthermore, this is also brought forth as an important factor when it comes to adding “a piece of kit”; can in a very subtle way tip the scale with regards to the total cognitive load.
On the other hand, what the most experienced jumpers highlight is the ability to understand how the winds, speed and vertical drop influence your jump, together with learning to conduct mathematical calculations in flight. This is an important part of the planning for the jump. O4: “Thorough preparations: In the case of new configurations, situations or other changes, you must take the time for a complete review with the opportunity to talk to experienced instructors” (O4). What seems to be an important part in this phase, one that could improve the current course package, is a set, specific list of factors to focus on, based on their current skill level (Dreyfus et al., 1986; Hoffman, 2013). In addition, understanding how individual factors influence fatigue and cognition and perhaps to a larger degree – individual differences and preferences. Lastly, based on the CDT, although expert intuition is present (Klein, 2015), there are clear indications that using a systematic, analytical approach with drilldown slides and checklists will likely decrease the cognitive workload and reduce sub optimal performance factors in phase 1.
5.5.2 Results jump phase 2/ Loaded in the plane

Description: Getting boarded in the plane at the right spot, with the right equipment at the right time.

Difficult cognitive elements: Knowing what tasks to focus on, in what order that creates mental surplus.

Table 5.3

Cognitive Demands Table jump phase 2

<table>
<thead>
<tr>
<th>What makes it difficult?</th>
<th>Suboptimal performance indicators</th>
<th>Expert cues &amp; Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stressful phase – unsmooth – Getting all your kit in the right place, short time before the plane is in the air, remembering the most important factors that influence your performance</td>
<td>Second guessing yourself and start a negative circle of thoughts. Using too much brain bytes on the stuff you don’t need too</td>
<td>Using the time to flight in a constructive way. Mental rehearsals of emergency procedures</td>
</tr>
<tr>
<td>Not having all the kit or the plan ready</td>
<td>Stressing to catch the plane, even if you are not quite ready</td>
<td>Do not rush the jump. Raise your hand. You are the only one who can do that</td>
</tr>
<tr>
<td>Starting to visualise the exit and emergency procedures</td>
<td>Stressing with the phase you are in, lacking the cognitive ability to think one step ahead</td>
<td>Maintain your calm, focus on tasks one to two steps ahead. Do not rest your head - maintain focus</td>
</tr>
<tr>
<td>Forgetting kit – and borrowing instead of calling the error</td>
<td>Peak activation of stress impairs ability to thing ahead Fearing not participating more than accepting a sub optimal solution</td>
<td>Changing even small pieces of equipment can disturb motor patterns and create a larger cognitive load</td>
</tr>
</tbody>
</table>

Discussion jump phase 2

For an outsider, it seems like this phase should not be particularly stressful. Surely, it is just about finding your seat in the plane? However, with the weight of the kit, and cold temperature gear, it is a demanding task, physically, just to get seated (Clemente-Suárez et al., 2017). However, what comes forth in the CDT is the stress experience among novices: what
is called the “feedback loop” (Ursin & Eriksen, 2004, p. 571). At this stage it seems to peak and suboptimal performance indicators begin to emerge and the tendency to start second-guessing yourself and start on a negative thought spiral can occur. This, in turn, further increases the phasic activation of stress (Ursin & Eriksen, 2004) and the operators describe how it hijacks their cognitive capacity in the next phases of the jump. The cues and strategies that expert operators bring forth are the ability to focus, to have a set plan, and not let the mind drift off with catastrophic thoughts, instead they maintain a task-oriented focus, conducting mental rehearsals using imagery (Holmes & Collins, 2001) of emergency procedures. Another expert cue and strategy that arose is raising your hand and asking the jumpmaster. The jumpmasters are present in the plane and are trained to handle these sorts of issues. Creating an understanding that it is expected of you to ask for assistance, is in the opinions of the experts interviewed, an indication that there is a willingness to learn: Not a weakness.

5.5.3 Results jump phase 3/ In flight to HARP

Description: The time from take-off to the “mask on- equipment check” or just equipment checks if the altitude demands pre breathing (above 15000) High Altitude Release Point (HARP).

Difficult cognitive elements: Having a clear and concise plan and being able to think one or two steps ahead in the process.
Table 5.4

Cognitive demands table phase 3

<table>
<thead>
<tr>
<th>What makes it difficult?</th>
<th>Suboptimal performance indicators</th>
<th>Expert cues &amp; Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a lot of noise, the seating is cramped, and maintaining your calm can be difficult. Start stressing with your comms, getting warm and kit</td>
<td>Stressing with the procedures, caught in a problem that could not be solved as on the ground, as tightening the straps too much. The feeling is different than on the ground</td>
<td>Do not stress with the procedures, manage your time and keep calm focusing and mentally rehearsing the most important tasks ahead of you, not just here and now. Also conduct initial negative mental rehearsal on emergency procedures to be prepared if it happens</td>
</tr>
<tr>
<td>Overfocus on the tightening of the straps</td>
<td>Not accepting that the straps are extremely tight, creates doubt, steals cognitive capacity</td>
<td>Learning to accept that the straps can be as tight as you can make them in a cramped area as opposed to the ground</td>
</tr>
<tr>
<td>Not following procedure</td>
<td>Slower in everything starting to late, creates stress- behind the curve.</td>
<td>Tricks of the trade, gloves fastened with strings. Being early in the things you can check before command is given, reduces stress.</td>
</tr>
<tr>
<td>Kit check phase in a difficult cramped environment</td>
<td>Kit check “paranoia” phase</td>
<td>Breathing, take control, refocus and stick to that</td>
</tr>
</tbody>
</table>

Discussion jump phase 3

From the previous phases, there seems to be a positive correlation between the stress levels of the operators (Ursin & Eriksen, 2004) and their present skill level (Dreyfus et al., 1986). If they struggle to break a negative state, their stress level will increase. As the fuselage is not pressurised, depending on the altitude, when they put on their O₂ masks, matters can become even more difficult. The CDT highlights – for novices, how a simple act on the ground such as putting on your gloves and knowing where to place them to access them easy in the plane, can be a stressor when the sign for “check gear” is presented by the Jumpmaster.
Operators are required to strap on the various bits of kit they have with them; furthermore, they describe the “feeling” of how tight the straps (on the parachute rig and equipment) are when contrasted to testing on the ground. It seems, accepting and being comfortable with this change in “feeling” is a phasic stress inhibitor for the experienced operators (Ursin & Eriksen, 2004). However, for the novice, this “feeling of loose straps” is at their current stage of learning a stress provoking abnormality. The ability to maintain a task-oriented focus refers to the process “in which the athlete allocates mental resources to cues, stimuli, or states” (Neumann, 2019, p. 2). The sub optimal consequence from the CDT is focusing on extraneous factors that holistically, do not influence the outcome of the jump. As time is limited, focussing on extraneous factors inhibits the focus of thinking one or two steps ahead - what the operators describe as coming “behind the curve”. This can probably be linked to the novices (Dreyfus et al., 1986) trying to make sense of what is going on as (O5) describes:

I was afraid at first. I do not like heights, and I think that throwing yourself from an airplane in the middle of the night is something that is a bit strange, so I started to put it into perspective. Standing on the edge of a ramp and falling is perhaps one of the easier things you can do. It is just when it is in that context it becomes scary. 25 thousand feet from an airplane. At night. So, I changed the perspective. I focus on other aspects. And when my preps are good, it enables this. Everything changed for me when I started to look forward to the ramp exit, more than I worried about all the stuff in the plane (O5).

With O5’s own words, the ability to change perspective worked for him, moving from something that he experienced as scary, to something he was able to control. This is supported in theory by the ability to change the perspective as a cognitive reappraisal strategy (Wallace-Hadrill & Kamboj, 2016).
5.5.4 Results jump phase 4 & 5/ Exit to canopy flight

Description: Jumping out of the plane in the correct order, releasing the parachute at the right altitude, equipment check and starting flight to DZ.

Difficult cognitive elements: Knowing what to focus on, right before jumping out of the plane in the dark of the night at 25000 thousand feet, in freezing temperatures (-70 degrees C). Freefall phase and canopy flyable.

Table 5.5

Cognitive Demands Table phase 4 & 5

<table>
<thead>
<tr>
<th>What makes it difficult?</th>
<th>Suboptimal performance indicators</th>
<th>Expert cues &amp; Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where do I start my checklist?</td>
<td>Especially if it has been a sub optimal start to the jump, it can be difficult knowing when to do what</td>
<td>When things go smooth the cognitive load is manageable, when things start to change from the norm, it can create an exponential difficulty in the decision making. After a while, trust your gut feeling and work from there. Sometimes you need to combine procedures to get an optimal solution</td>
</tr>
<tr>
<td>Unstable exit</td>
<td>Understanding the feeling (drogue) So stressed that you do a sub optimal procedure, i.e. countering the spin with the wrong leg, thereby increasing the spin</td>
<td>Mental rehearsals and visualisation are key to be able to select correct procedures. The conflict between doing the procedure instantly and just give a couple of seconds</td>
</tr>
<tr>
<td>Problems with the opening</td>
<td>Check the equipment and use white light if you are in doubt. Cognitive overload -Not knowing where in the decision process you are.</td>
<td>Stay calm and identify. Try to visualise the error based on the gut feeling and adjust from that</td>
</tr>
<tr>
<td>Flying the wrong way</td>
<td>Understanding that you are flying the wrong way.</td>
<td>Function test and check your bearing to target.</td>
</tr>
<tr>
<td>Dropped in the wrong position.</td>
<td>Not detecting it in time</td>
<td>Function test and check your bearing to target.</td>
</tr>
<tr>
<td>Does everything function as it should?</td>
<td>Spending too much “brain bytes” on everything at once</td>
<td>Check GPS speed, and height speed from the ground prep plan</td>
</tr>
</tbody>
</table>
| Dropping /releasing gear to early or not at all | Uncertainty of everything -Overthinking, “not seeing out of your eyes”. | Having a plan – getting control of the console  
Doing the checklist in the procedure |
| Trouble finding the release handle when jumping with new kit (i.e., backpack) | Not testing it on the ground and not asking more experienced jumpers beforehand | Doing the checklist in the procedure Ask – then adjust. In freefall focus on the procedure – step by step |
**Discussion jump phase 4 & 5**

The difficult cognitive element for all novices in this phase is the fact that you jump out of a perfectly functioning airplane at altitudes that require all the kit previously described, at night, with the attendant visual restrictions. With limited vision, this influences novices’ performance. An interesting example, although from another context is research that examined the effect on gymnasts walking on a balance beam their vision impaired. It was concluded that, “when vision is not available in situations in which it normally is available, specific movement characteristics are negatively affected” (Magill & Anderson, 2014, p. 122). In the context of HAHO, when operators jump out of the plane, a drogue is set for you. Meaning they have a mini parachute with a line of approximately 5 meters. This is attached to the middle of the parachute rig to help stabilise the freefall and on release of the “golf ball” [release system] pulls the main chute out. In daytime, the procedure is to gaze back to see if the drogue is deployed and operating as it should. At night, it is impossible to see, but the experienced operators describe a recognisable kinaesthetic feeling when it is properly deployed. As a novice, given the novelty of all that is going on, the operators explain that they are unable to distinguish and isolate this specific feeling/sensation/feedback. The feedback operators’ experience could be described as a finely tuned open motor skill, within a closed-loop control system - depicted in a specific environmental context (Magill & Anderson, 2014). In short, using the degrees of freedom principle as a lens – the novices’ performance exhibits a higher degree of variability than the experts interviewed (Bernshtein, 2016; Magill & Anderson, 2014, p. 91).

An expert strategy from the CDT is to try and visualise the error, based on the feeling of what is happening, at night, utilising visualisation techniques to try and mitigate and adjust. There are distinct similarities to a RPD approach based on expert’s experience (Klein, 2007, 2015) which is termed flexecution: “During flexecution, we’re simultaneously trying to
achieve goals and to discover, clarify, and define them” (Klein, 2007, p. 82). In the words of one of the operators, this change in feeling was of vital importance:

I remember jump number 40. I had at least 10 jumps with slightly different configurations and different outcomes. It is difficult to know how changes in the configuration will influence the experience. When you know what to expect, and your body has felt the forces and all of that it becomes slightly better. After a period with a lot of tactical jumping, I managed just to keep my head above water, then it was a new gadget thingy introduced, which makes it hard. But then we moved back and jumped sport jumping again, it was magical. Then I discovered how fun it was. It went from the worst thing I ever have done to the best thing I do (O6).

This operator manages to capture a description of this change in feeling, and how just introducing a single piece of kit or a change of procedure makes this activity much more challenging. Subsequently however, when moving back in the progression to jumping with just a sports parachute rig, the whole experience is simplified and changes. One explanation, following Schmidt’s (1975) “generalized motor-program” (GMP) theory, is that when moving back in terms of skill progression enabled an “a-ha” moment that could be harnessed to facilitate a tipping point in his motor program, thus enabling a deeper understanding of his own skill level. In addition, coping took place, suggesting a link between cognition and motor skills in this context; essentially, it was the subjective feeling of being able to master the task that reduced the stress responses (Ursin & Eriksen, 2004).

5.5.5 Results jump phase 6/Flight-navigation-communication

Description of the phase: Maintaining the position in the stick, with the correct altitude, separation and bearing. Conducting comms check and maintaining reporting lines. Managing different conditions and weather changes.
Difficult cognitive elements: Being able to move between tasks, and still have the cognitive capacity to pay attention to what is happening around you and conducting contingency planning on the go.

**Table 5.6**

**Cognitive Demands Table phase 6**

<table>
<thead>
<tr>
<th>What makes it difficult?</th>
<th>Suboptimal performance indicators</th>
<th>Expert cues &amp; Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similar height to another jumper</td>
<td>Becoming stressed and putting in the brakes instead of increasing drop. Forgetting point from the rehearsal of concept drills (ROC DRILL) A lot to think on, not always intuitive, demands more cognitive capacity</td>
<td>Keep the position in the stick, depending on the height. Follow the plan. Recommendation for solution on comms</td>
</tr>
<tr>
<td>GPS pointing in the wrong direction.</td>
<td>Not trusting your kit and not knowing what to look for</td>
<td>On a day jump, fly on visual cues (infra-red at night training)</td>
</tr>
<tr>
<td>Not recognising the ground from the ground phase brief</td>
<td>Trusting the instruments, looking for other jumpers, forgetting comms. “Looking too much out of the eyes”.</td>
<td>Trust your instruments. Bearing, height, speed, drop speed</td>
</tr>
<tr>
<td>Lost comms (nighttime)</td>
<td>Spending too much time fixing it and losing height so that it could be difficult to get to lost comms landing area</td>
<td>Lost comms landing, flasher, visible course altering.</td>
</tr>
<tr>
<td>Weather conditions: Clouds, thunder clouds – visibility</td>
<td>An extra task can cause major difficulties in the decision-making process</td>
<td>If things are ok, it is a relaxing time – breathing – focusing on the next task, listening to comms and visualise what is going on</td>
</tr>
<tr>
<td>Adding tasks</td>
<td>Become too concerned where the DZ is and forgetting the wind speed</td>
<td>Common challenge, gets better with time, be patient and accept your present skill level and adjust according to it</td>
</tr>
<tr>
<td>Dropping much faster because of weight</td>
<td>Spending too much time in the decision-making process</td>
<td>Building experience during training to be able to perform when it is live. It is why we are training, building an experience bank to cash out</td>
</tr>
<tr>
<td>Can I land with this canopy?</td>
<td>Falling below the height (xxxft) where you must land with that canopy or with two</td>
<td>Do the test, look at the data, decide, can I land with what I have, or do I need to get rid of it?</td>
</tr>
<tr>
<td>Understanding your datapoints in flight and making actual use of them</td>
<td>Spending a lot of “brain bytes” on everything instead of maintaining focus</td>
<td>Spend time with a more experienced jumper and really learn what it means for you in flight</td>
</tr>
</tbody>
</table>

**Discussion jump phase 6**

Of all the phases, this is the phase that has the longest duration (flying the parachute).

When the parachute opens and they fly under canopy, there is a distinct change in the overall...
experience. From all the sounds and smells, exiting the plane, accelerating towards terminal velocity and after a (violent) decrease in drop speed when the parachute opens, the world falls silent. Then the operator tests the manoeuvrability of the chute, checking if it is ok to fly, before a set sequence of procedures start. At night, this includes getting the night vision on, preparing the navigation instruments and making sure they are on the right heading and communicating with the team via radio. Distinctively mentioned in this phase is how the expert cues change from motoric to trusting your instruments; in other words, executive functions (cognition) kicks-in. Furthermore, the ability to visualise your performance, through mental rehearsal is commonly utilised. However, in this phase there are a lot of factors that influence the operator’s performance. If there are difficult weather conditions, it is a lot more demanding; other considerations are: is the kit intact and where it should be after the canopy opens; and can the operator communicate with the other team members?

What seems particularly difficult for the novice is managing these steps and optimising their performance when the number of cognitive decisions to be made is almost equal to the amount expected from the elite operators. The novice jumper is much closer to their cognitive threshold; referring to Hicks’ law (1952), which states that reaction time will “increase logarithmically as the number of stimulus- response choices increase (Magill & Anderson, 2014, p. 175). As such, novices’ motor patterns are still in “working memory mode, not yet stored in long-term memory” (Magill & Anderson, 2014, p. 231) and require more cognitive effort to process the stimuli as (O2) describes it; “Your level of stress is the most important. You must work to find your sweet spot, not too much and not too little”. Furthermore, the expert has through their experience developed intuition, in-keeping with the RPD model (Klein, 2015).
5.5.6 Results jump phase 7/Downwind- Base leg

Description phase 7: Downwind/base leg: The start of the landing pattern, burning the correct amount of height and setting up for downwind and the correct pattern for the base leg.

Difficult cognitive elements: Being able to plan and set up for success is dependent on a wide range of cognitive decisions in flight as descending speed, wind directions and strength, DZ size, visual cues and interpretation of how it will influence your landing.

Table 5.7

Cognitive Demands Table phase 7/Downwind base leg

<table>
<thead>
<tr>
<th>What makes it difficult?</th>
<th>Suboptimal performance indicators</th>
<th>Expert cues &amp; Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winds are changing</td>
<td>Become too concerned with the planned pattern</td>
<td>Pay attention to your speed and wind</td>
</tr>
<tr>
<td>Land on stick leader</td>
<td>Trying to make it into the DZ.</td>
<td>Decision making</td>
</tr>
<tr>
<td>Foggy conditions in the landing area</td>
<td>Fear of evaluation can detriment performance and lead to difficult situations</td>
<td>Play it safe – try white light – fly on instruments -ask for support-back risers to decrease drop speed</td>
</tr>
<tr>
<td>Increasing wind on downwind phase</td>
<td>The speed is high, but failing to identify it, passing landing area</td>
<td>Being able to decide by feeling the wind, going from systems to sensing</td>
</tr>
<tr>
<td>Precision landing- being too low</td>
<td>Forgetting the plan, not noticing</td>
<td>Crab gears up against the wind, look at landing area slide backwards don’t go too far down and maintain eyes on DZ</td>
</tr>
<tr>
<td>Difficult to identify DZ</td>
<td>Eating cognitive capacity, did not drop gear</td>
<td>Precision based on current level. Not optimal, but it is doable</td>
</tr>
</tbody>
</table>
Discussion jump phase 7

As the height decreases to about 1000 ft. AGL, the operators are starting their approach towards landing at the designated drop zone or DZ - following a pre-planned pattern. In this phase, depending on your position in the stack, (the less experienced jumpers never jump as a stick leader - who is first on the ground), so the stick leader has communication with the other members of the team and provides real time updates via the radio if there are any changes to the plan, or factors that are germane. This reduces the number of decisions the novices, and the jumpers who do not yet have expert status, need to conduct. Nevertheless, from the CDT, there is a change in urgency when it comes to decision making; for example, if a novice has an issue with a drop speed and direction towards the wind, the landing can be dangerous. An expert cue here is to stay calm and breathe, paying attention to the instruments and planning and to deploy MST techniques that promote self-regulation (Jerath et al., 2015). A difficult aspect here is paying attention to the most important parts of this phase, in particular the wind speed. Furthermore, given all the factors to consider for the novice, it might result in them missing a cue that the experts are aware of.

Following the experts ‘cues here, there is only experience that makes you better - and that is knowing what the most important factor that influences your landing at the right time, is. As (O4) puts it, “when you combine your experiences and what the book says, we achieve the best performance”, implying that understanding what is going on and using experience to make the decisions is another example of RPD (Klein, 2015).

5.5.7 Results jump phase 8/ Landing

Description: The final approach.
Difficult cognitive elements: According to plan landing in the predesigned pattern in the DZ safely and securely – and seeing if there are any obstacles to mitigate on the final approach.
Getting ready for the operation as the infiltration part is conducted.
Table 5.8

*Cognitive Demands Table Jump Phase 8*

<table>
<thead>
<tr>
<th>What makes it difficult?</th>
<th>Suboptimal performance indicators</th>
<th>Expert cues &amp; Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small DZ</td>
<td>Setting up too early Uncertainty in flying, taking too much time. Less is more. If you are too late, set it up so you can land safely</td>
<td>Your pattern in the previous stage sets you up for success</td>
</tr>
</tbody>
</table>

**Discussion jump phase 8**

When the downwind/base leg is completed, the operators set up against the wind to land safely. The factor that the experts consider to be a complicating factor (naturally) is the size of the DZ. Based on the CDT, there is a tendency to overfly it as a novice, and depending on what is on the other side of the DZ, this could create a dangerous situation. However, the most sub optimal approach is being forced to land downwind. The expert cues do not refer to exactly this phase, but if they are able to set up phase 7, phase 8 is without *drama*. The important factor here seems to be maintaining an optimal performance arousal (Bertollo et al., 2013, 2016; Ursin & Eriksen, 2004). As one of the operators describe it:

You follow a formula, but if you do not know what the formula is, just the explanation, you can never switch out some parts in it to know how to do it better. You don’t know even where to look because you are just looking at it at a macro level (O3).

ImPLYING that to be able to be “flexecutive” (Klein, 2007), a certain skill level needs to be integrated into the long-term memory (Magill & Anderson, 2014) to have the necessary cognitive capacity to make intuitive decisions based on recognition (Klein, 2015).

**5.5.8 Results “The scenario from hell”**

As suggested in the KA interview form, a useful option to understand cognitive demands was to bring forth the question about “the scenario from hell”.
What the operators highlight is the ability to practice in conditions that can simulate operational conditions, and not necessarily an *easy commute with the bus*. Training with the kit and equipment they will jump with in an operational setting is brought forth. “Making it realistic” (O1). And in this realism, there should be difficulties, at the appropriate level of course, but at the same time as O5 explains it:

That what makes our concept the best in the world. We can conduct jumps during circumstances no one else can. Cloudy, windy, foggy at night. No visibility in the stack. *Airdiving*. And that we also can conduct the job afterwards. You do not win the war by insertion with parachute. It is just a tool that gets us where we need to be to start the real mission (O5).

Understanding the implications of performance under pressure in HAHO is shared by all the operators. O4 puts it in another perspective:

Understanding the surrounding circumstances. The factor time. It always works against you. Then you have this bus ride [plane] we need to catch. We need to have the money for the bus. Set the framing, clear the head to get ground preps. Important to do it step by step according to plan, so we don’t miss out on anything. That is a pitfall for sure. Even with a lot of experience. Because if you miss a step, it might be that the consequence was not so big on the last mission, but on this one it could be vital (O4).

### 5.5.9 Summary of results and discussion

Clearly, the ACTA has provided a lens to understand more about the cognitive demands in HAHO. As the operators describe the complexity of HAHO, they want to reach a certain level of expertise where they are approved to be combat ready. Therefore, it is necessary to train in a way that mimics operations and provides the necessary challenges that create vivid, realistic experiences that are necessary if HAHO is to be deployed successfully. In the “scenario from hell” The operators bring out two very interesting factors. On the one hand it
is about realistic training; simulating events or being able to jump in different conditions to gain the experience to conduct the insertion in operational conditions. The performance part is known to these Combat Olympians (Chapter 2). On the other hand, it is not only the skill-based decision making that the operators are observant of. As (O4) says, the ability to plan in an analytical fashion is also critical for mission success.

Moving forward, another NDM development namely macrocognition (Klein & Wright, 2016) offers some useful perspectives. It is a model for understanding the cognitive dimensions, functions and processes. The authors defined “macrocognition as the study of cognitive processes affecting people such as firefighters, pilots, nurses, and others who had to wrestle with difficult dilemmas in complex settings under time pressure and uncertainty” (Klein & Wright, 2016, p. 3).

**Figure 5.2**

*Macrocognition*
Note: The macrocognitive figure (Klein & Wright, 2016, p. 2), “illustrates the range of cognitive functions and processes addressed by macrocognitive models” (Klein et al., 2003).

This model can be a very useful tool in developing a roadmap of the phases in HAHO and the various challenges that occur. Derived from both theory and the data from this project there is a clear need to link and embed macrocognition in the specific tailoring of psychological methods and interventions to increase performance by enhancing training and preparation.

Moving over to the second objective, Table 5.9 presents an overview of the phases and challenging cognitive aspects in each phase, and MST options as discussed:
### Table 5.9

**Summary table with possible performance psychology implementations:**

<table>
<thead>
<tr>
<th>Phase/Difficult cognitive elements</th>
<th>Expert cues and strategies</th>
<th>Possible implementations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>Making the right judgements based on their own level of competence under time pressure</td>
<td>- Extracting what influences your performance at your level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Understanding and admitting your own level of fatigue is a prerequisite to optimum training and subsequent performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Providing the novice jumpers with both individual/group coaching and group-based relaxation protocols could assist in mitigating fatigue and enhance learning</td>
</tr>
<tr>
<td>Phase 2</td>
<td>Knowing what tasks to focus on, in what order that creates mental surplus</td>
<td>- Mental rehearsals of emergency procedures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Maintain your calm, focus on tasks one to two steps ahead</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Developing a task-oriented focus, conducting mental rehearsals utilising imagery</td>
</tr>
<tr>
<td>Phase 3</td>
<td>Having a clear and concise plan and being able to think one or two steps ahead in the process</td>
<td>- Keep calm focusing and mentally rehearsing the most important tasks ahead of you, not just here and now. Also conduct initial negative mental rehearsal on emergency procedures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Breathing, take control, refocus and stick to that</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Developing the ability to maintain focus and influence psychophysiological state through mental rehearsals and breathing</td>
</tr>
<tr>
<td>Phase 4 and 5</td>
<td>Knowing what to focus on, right before jumping out of the plane in the dark of the night at 25000 thousand feet, in freezing temperatures (-70 degrees C). Freefall phase and canopy flyable</td>
<td>- Stay calm and identify. Try to visualise the error based on the gut feeling and adjust from that</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- When things go smooth the cognitive load is manageable, when things start to change from the norm, it can create an exponential difficulty in the decision making</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practising negative imagery and move from tacit to explicit in being able to understand procedures</td>
</tr>
<tr>
<td>Phase 6</td>
<td>Being able to move between tasks, and still have the cognitive capacity to pay attention to what is happening around you and conducting contingency planning on the go</td>
<td>- Building experience during training to be able to perform when it is live. It is why we are training, building an experience bank to cash out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Developing the ability to visualise your performance, through mental rehearsals-focus and refocusing</td>
</tr>
<tr>
<td>Phase 7</td>
<td>Being able to plan and set up for success is dependent on a wide range of cognitive decisions in flight as descending speed, wind directions and strength, DZ size, visual cues and interpretation of how it will influence your landing</td>
<td>- Decision making</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tactical Decision Games</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MST techniques that promote self-regulation</td>
</tr>
<tr>
<td>Phase 8</td>
<td>According to plan landing in the predesigned pattern in the DZ safely and securely – and seeing if there are any obstacles to mitigate on the final approach. Getting ready for the operation as the infiltration part is conducted</td>
<td>- Your pattern in the previous stage sets you up for success</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Working on optimal performance arousal through modified PPP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Chapter 4)</td>
</tr>
</tbody>
</table>

123
Based on the discussion sections in each phase, clearly a bespoke MST concept can be developed for the novice jumpers to meet the cues and strategies that are addressed from the experts. As Table 5.9 displays, there are options for an integration of performance psychological methods, therefore future options could be to pilot the integration of a bespoke MST package tailored to this challenging context. Being able to utilise performance psychology techniques could move the performance continuum towards optimal performance (McCrory et al., 2013).

In addition, an unintended effect of the ACTA is also a partial CC. The chapter demonstrates the cognitive demands and possible interventions. This caters to a degree for a needs analysis; “performer task and environment” (the challenges of different phases and their cognitive demands). An issue conceptualisation; (through understanding in depth the different phases and cognitive demands), and a case formulation to assess and plan effective interventions are on to a flying start (Martindale, 2023, p. 26)

Lastly, I would also point out that although performance psychology techniques might cement, or even increase performance, careful and professional consideration needs to be made to optimise its output.

5.6 Limitations

Naturally this investigation is not without limitations. As the methodology is based on the skill level, creativity and rigour of me as the researcher, the product is a “one off” and certainly was demanding, as it is recommended to have a team (Militello & Hutton, 1998) when conducting the interviews to be able to capture all nuances. In addition, the sample of respondents are limited, none of them were novices and as explained earlier it was a one-off product. In addition, it was conducted within a short time frame. However, they had all been novices at one point, and due to the level of training needed to understand what is going on,
interviewing novices in thin context would not have produced these results, on the other hand, it could have reinforced the issues that occur. On the other hand, the novelty and originality of my research combined with the member reflections stages hopefully cater for these shortcomings to a degree.

5.7 Summary and next steps

As the operator experts explain when considering their journey from novice to expert level, there are of course no substitutions for their experiential learning in individual and team self-efficacy development (Bandura, 1997; Kolb, 2015). Albeit, as previously described in Chapters 2 and 4, this empirical chapter creates deeper insight and clarification which strengthens my initial hypothesis: that a bespoke performance psychology program can assist, improve and perhaps even accelerate this developmental journey. Providing a solid theoretical base with a causality in training methods, with space for individual development might increase the effects of a bespoke performance psychology package, as exemplified in Chapter 4. However, these effects remain to be investigated although the findings from the present chapter and the sniper study in Chapter 4 shows promise. Consequently, it is my contention that a strong case could be developed that in the case of MFF education, implementing performance psychology, as a part of the program would be a good fit.

In the next and last empirical chapter, I take the lessons learned so far, the importance of understanding their context and the challenges they face and apply them to a military deployment. In short, the performance of a full mission, from planning to inception and execution, through to debrief. The whole game.
Chapter 6 - Applications For the Whole Game

6.1 Introduction

6.1.1 Overview

Thus far, I have looked at the potential application of MST to specific training requirements (Chapter 4) and how psychological research methods can also be used to fully understand the mental challenges inherent in specialist tasks in Chapter 5. For my final empirical investigation, and as explained in Chapter 2 regarding the specialness of SOF, I wanted to investigate an SOF unit preparing for deployment in a longitudinal manner to tease out the differential uses of mental skills and other performance-related inputs. As outlined in Chapter 2, to develop a foundation for further development and possibly implementing bespoke performance psychology for SOF, I believe it is valuable to understand operators’ experiences over time, both in training and their arena-on operations. In short, it is to see how performance psychology might apply to playing the full game. Therefore, in this chapter, I piloted a bespoke performance psychology package for SOF during their work-up period in preparation for a planned deployment followed up post-deployment to assess the impact on the operators (Elliott & Wexler, 1994). In addition, I conducted a follow-up after 18 months to learn more about the perceived effects from the individual operators to validate further the program's impact as experienced by the operators.
6.1.2 Purpose of the investigation

Based on the above considerations the objectives of this investigation were to:

1. Investigating the impacts from foundational SOF selection, training & culture for bespoke design of performance psychology.
2. Pilot testing the program described, seeking process and outcome divided into three brackets; before, during and after a mission, seeking the operators’ perspectives on the programs impact.

Reflecting these considerations, I wanted to research the impact of a culturally specific, tailor-made, performance psychology package for a NORSOF unit in a workup prior to deployment, debriefing them post mission to establish the perceived impacts of deployment on task performance.

If performance psychology for SOF is to be developed to its full potential, my research thus far demonstrates (Chapter 2) that it is important to develop a solid theoretical and empirical base. And building on the results from Chapters 4 and 5, that bespoke performance psychology starts with a CC (Martindale, 2023).

Consequently, my overall aim was to determine if, how, when and most crucially, why performance psychology can be used to potentially determine and alleviate the impact of the training and performance cycle that is fundamental to the SOF workplace.

6.2 Methods

6.2.1 Research design

As discussed in Chapter 2, there are some key elements missing in the current literature; accordingly, through the design and methods of this investigation, I aimed to advance this field. To understand SOF operatives’ work requirements, this research needed to be situ-
ated in SOF operatives’ day-to-day environment. Following my pragmatic approach, an exploratory longitudinal case study methodology (Bryman, 2016; Robson & McCartan, 2016; Willig, 2013; Yin, 2018) was deemed the best strategy to achieve my research goals. This approach was adopted to understand, in depth, how the operators experienced the performance psychology training package, over a significant period. The total time from first interactions to the final follow up was 26 months (Figure 6.1). RTA was conducted on the interviews to analyse the data collected (Binder et al., 2012; Braun & Clarke, 2019). Figure 6.1 provides an overview and timeline for the present study:

**Figure 6.1**

*Timeline of the exploratory longitudinal case study*

Note: To provide an overview of the study, I constructed a figure to show significant milestones and how the investigation was operationalised. The first section contains the provision of the performance psychology package. The second part is the planned deployment, and the third section (in italics) displays the unplanned mission and group-based interview. In addition, a follow up was conducted 18 months after the end date of the case study.

The opportunity to conduct a performance psychology package came to be, as this unit was to undertake a pre-planned operation in Kabul, Afghanistan. The mission entailed being
on high readiness for crisis response, as a part of mentoring the Afghan Police Crisis Response Unit (CRU 222), (Forsvaret, 2023). As such, the skillset needed for this operation can be viewed as based around the core competencies (Chapter 2) for SOF operators: namely to respond rapidly to a dangerous and complex (ongoing) situation(s), with the knowledge they possess as a group and individually, with a very short response time, often down to 5 minutes.

It is about getting into the thick of it and solving tactical problems on their feet, often as a response to an ongoing, complex attack. Furthermore, the response to a crisis mission they received orders for is a key example of SOF missions (Chapter 2). In short, the group were scrambled on very short notice; indeed, returning to Kabul to facilitate evacuation in the last days of allied presence in Afghanistan (NRK, 2021).

6.2.2 Participants

All participants in this research were serving operators in Norwegian Special Operation Forces (NORSOF). NORSOF consist of three separate units, Forsvarets Spesial Kommando (FSK), Marine Jeger Kommandoen (MJK) and 339 Special Operations Air Support Wing (SOAS)\(^1\), (Forsvaret, 2022). The intervention and investigation were conducted at one of these units. All the participants had been through selection and followed the training pipeline to serve as operators at different ranks, with different specialties within the unit. All were serving operationally in a Sabre squadron at the time of the study.

An important aspect to highlight is who these operators are with a quote from the official website:

The people who apply to NORSOF come from all over Norway, with very different backgrounds and experiences. These range from soldiers who enter via conscription to

\(^1\) From 2024 the organisation is changed
professional soldiers, academics, to athletes and workers from a practical job (Forsvaret, 2022).

In other words, people from all over Norway, with different backgrounds and military experience. NORSOF’s main tasks are being on international and national high readiness (Forsvaret, 2022). In short, these men must be ready to be deployed all year round to meet our nations and NATO’s needs (Chapter 2). Another important aspect is the culture in SOF as opposed to GPF (Chapter 2) based on their mission set, they have a flat structure, as opposed to GPF adherence to hierarchy.

Ethical approval from the University and local permission to conduct research in the Norwegian Armed Forces was granted. The whole troop volunteered. In addition, purposive maximum variation sampling (Bryman, 2016) was conducted by the troop commander to evenly spread-out age and experience within the troop I worked with. One participant received other orders after the first Interview. As a result, the total became (n=7), Age (M=26.7) (SD=3.59), coded A, B, C, D, E, F, G. Prior to commencing the study, participant information letters were sent out. At the introductory session – on day one - participant information sheets were distributed. This was followed by a brief explanation of the research project, its educational content, and the first author’s role in it. It was made clear that I had two functions: a role as a performance psychologist in training, and as a researcher. Furthermore, it was made explicit that regardless of my professional background, the aims of the research were to understand more about what kind of performance psychology package could assist the operator’s performance in training and on missions. My role was to present different methods and let the operators themselves evaluate the concepts through semi structured, in-depth interviews. All participants were given a week to decide whether to take part, and if they opted in, were required to provide written informed consent. Participation was voluntary and all participants were assured of the confidentiality and anonymity during the research process.
6.2.3 Performance psychology interventions

As the research that is available to the public is limited when it comes to SOF, my research in Chapter 2 creates the theoretical backdrop for this chapter. In addition, I researched some of the theoretical and empirical underpinnings of performance psychology programs previously conducted (Greene, 2019; Grier et al., 2018; Herzog & Deuster, 2014). It turned out that one of the missing pieces was to involve the operators in the evaluation of a bespoke performance psychology program relating to their missions. The purpose of a bespoke piece of research such as this is to select the appropriate concepts to integrate into the performance psychology program. Drawing on my experiences (Chapters 4 and 5), the natural choice was to continue with a skill-based approach “in an appropriate challenging environment” (Collins & Macnamara, 2017, p. 6), in other words, in their performance environment. As explained in Chapter 4, testing interventions in a real-world context is challenging. However, this is also where these performers train. In addition, their performance arena is even more “in the wild” (Chamberlain et al., 2012). In sum, as an embedded performance psychologist and researcher in training, an important point was to partake in all activities performed by the troop. As argued in Chapter 2, doing the research with them and for them (Collins & Kamin 2012).

6.2.4 Overview of the interventions

At the start of the work up period I held 3 formal lectures each lasting 40 minutes. The first session was an introduction of myself, the research, and distributing informed consent forms and the info letter. I had prepared a booklet (appendix D.1) and a PowerPoint lecture to give an overview of the performance psychology concepts I intended to use. These were subsequently presented in separate lectures. After the initial week where I gave lectures, followed the training and become acquainted with the men, the first interview was conducted the following week. This interview served a dual purpose. Firstly, collecting data for the overall investigation, secondly it enabled an in-depth case conceptualisation (Martindale & Collins,
where I was able to immediately go into specifics from my macro case conceptualisation preparations and to begin the process of tailoring my interventions to this context (Collins et al., 2022). From that point on, I was balancing the roles of being a performance psychologist in training - and that of a researcher, with my primary focus on my clients, the team. I was aiming to support the team’s training using performance psychology concepts while applying the test, tweak, repeat method (Collins et al., 2016). In addition, I was continually building on my experience by reflecting and developing my own practice as I delivered the training. Therefore, I played an active part in the production of knowledge. To harness this rich learning experience, I employed two forms of reflexivity: introspective reflexivity, understanding my own position in relation the context of the study, and intersubjective reflexivity - my relationships with the participants (Finlay, 2002).

6.2.5 Examples from the performance psychology training

Table 6.1

<table>
<thead>
<tr>
<th>Timings/Task</th>
<th>Troop focus areas</th>
<th>My focus areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>0500 - 0730 Physical training/breakfast</td>
<td>Maintaining physical standards</td>
<td>Being a part of the group</td>
</tr>
<tr>
<td>0730 - 0830 Team room</td>
<td>Plan for the day with specific focus areas. Admin</td>
<td>Sharing some aspects from performance psychology that could create a basis for learning (short lecture)</td>
</tr>
<tr>
<td>0900 - 1030 Close quarter battle (CQB)</td>
<td>Team and individual drills</td>
<td>Observe the training and participate in the feedback sessions, assisting them in exploring learning points both in teams and individual</td>
</tr>
<tr>
<td>1100 - 1200 Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1230 - 1430 CQB</td>
<td>Team and individual drills</td>
<td>Observe the training and participate in the feedback sessions, assisting them in exploring learning points both in teams and individual</td>
</tr>
<tr>
<td>1530 - 1630 Dinner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630 - 1730 Team room</td>
<td>Admin. Scenario brief</td>
<td>Repeat the most important points from the day, from a performance psychology perspective</td>
</tr>
<tr>
<td>1800 - 2100 Scenario training CQB</td>
<td>Putting their skills in context, specific scenarios</td>
<td>Observe the scenario training, participate in feedback sessions. As an example, here, introduce the RPD (Klein, 2015)</td>
</tr>
</tbody>
</table>
Note: As a sample to show how a training day was organised and divided into different focus areas.

Usually, the day starts with an informal reflection about the last 24 hours and focuses on the upcoming 24 hours. I introduced my own version of a check-in (Smith et al., 2015), which they were familiar with and was derived from the static line parachute jumping study. It is the last thing you do before exiting the plane. Hence, as a philosophical metaphor (is everything ready to jump?). I hoped it would make sense for the operators. I wanted them to take into consideration the holistic perspective of performance and utilise learning as a reflective practice tool. To develop adaptive flexibility and “transcend the fixity of their specialised orientation” (Kolb, 2015, p. 316). This was facilitated by inviting them to share their personal mental and physical state in an informal meeting setting. My strategy was that this could lower the threshold to talk about more than just the ‘to-do list’ for the day whilst also inviting each individual operator to formulate their most important focus for the training ahead. I introduced goal setting (Bandura et al., 1999; Deci & Flaste, 1996; Healy et al., 2018; Kolb, 2015; Locke & Latham, 2006) in a practical context, where my idea was that it could develop organically. And perhaps present other perspectives. Following this, the troop commander/troop sergeant introduced the activities and plan for the day. After that, I had up to 15 minutes to share theoretical/practical perspectives from performance psychology aimed at the activities for the day ahead. With the total workload of the operators in mind, I wanted to be precise and concise in my lectures. Usually, I prepared these in the evenings for the day to come based on my reflections from the training (i.e., Table 6.1). For example, I sought to explain the impact of SMM (Espevik et al., 2006) and the potential they hold for attenuating and syncing team members' shared awareness in training and on the battlefield. Furthermore, and potentially, the impact this has on decision making, especially flexecution (Klein, 2007, 2007; Klein & Wright,
Each lecture was interactive, and the operators were given the opportunity to ask questions related to the performance psychology content. Another practical example was the introduction of controlled diaphragmatic breathing (Adams et al., 2009; Gilbert, 2003; Jerath et al., 2015). In the introductory session, shortly before going through the theoretical basis of lecture content, the different aspects of breathing were trialled and tested as a part of their physical training. This enabled me to move beyond purely theoretical constructs and work specifically on teaching my proposed version of the practice.

6.2.6 Performance psychology components

Next, moving into the more scenario training/specific mission training, my task was to function as an embedded performance psychologist. Enhancing the concepts as explained in Table 6.2. To summarise, I followed the same procedure each session (Kolb, 2015); I explained the theory behind the subject and its practical applications and reminded them of where they could read more about it in the booklet. Following this, I worked through a practical example, inviting them to test it out. Then quizzing them about where it would be applicable and invited them to reflect on this experience during the training. Drawing from my experience in Chapter 4, I used a similar philosophical approach to teaching. However, since this investigation was longer in duration, with serving operators, a larger emphasis on teaching them the basics across a larger curriculum was selected. As presented in Table 6.2:
### Table 6.2

**Overview of performance psychology components**

<table>
<thead>
<tr>
<th>Lecture based theoretical components</th>
<th>Team development “in the wild”</th>
<th>Individual mental skills training in “the wild”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress and performance in a military context (Booklet appendix D.1)</td>
<td>Professional judgement and decision making (Collins et.al, 2017)</td>
<td>Adopting similar MST as on the advanced sniper course (Table 4.1)</td>
</tr>
<tr>
<td>Holistic and bespoke performance psychology for SOF</td>
<td>Shared Mental Models (Espetvik et.al, 2006)</td>
<td></td>
</tr>
<tr>
<td>Cognition and emotions (Lazarus &amp; Folkman, 1984)</td>
<td>Community of practice (Li et al, 2009)</td>
<td></td>
</tr>
<tr>
<td>Experiential learning (Kolb, 2015)</td>
<td>Check in/out (Smith et.al, 2015)</td>
<td></td>
</tr>
<tr>
<td>Naturalistic Decision Making (Klein, 2015)</td>
<td>Feedback and feedforward (Hattie &amp; Timperley, 2007)</td>
<td></td>
</tr>
<tr>
<td>Self- efficacy (Bandura, 1999)</td>
<td>Single coaching session 15 item CMBQ (Turner et.al, 2020)</td>
<td></td>
</tr>
<tr>
<td>The skill model (Dreyfus &amp; Dreyfus, 1980)</td>
<td>BASIC ID for performance (Lazarus, 1973)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>REBT perspective (Ellis, 1976)</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* The table describes my three-pronged approach, building on the experiences of MST from the sniper course and adding in the theoretical components for performance development individually, and for to the team as a comprehensive performance psychology educational training package.

#### 6.2.7 Selection criteria

The selection criteria for the interventions have grown out of experience from the previous chapters. In addition, my supervisory team have assisted in discussions for the best
suited approaches in this context. I wanted to present theory with a causality in applied settings. The booklet handed out is a popular science version of the methods with practical examples (appendix D.1). As the table shows, two main foci were selected: The team and the individual aspects of performance in their natural environment. This manuscript was followed for the whole period, except for exercises, where the observation phase lasted for longer periods at the time. I was always provided with a slot to guide the evaluation of the performance psychology content or activity: moving between the team and the individual aspects as different skills were practised. As with Olympians, the operators are experts in their respective fields. Accordingly, my approach to training them was often to assist them by seeking ways to move them from holding tacit knowledge (knowing more than they can tell) to recognising the significance of this information by transforming this mode of knowledge to explicit knowledge (Toom, 2012), by using reflection on action, peer teaching and feedback.

Furthermore, along with promoting the philosophy of adaptive skills as utilised in Chapter 4 (Ward et al., 2018) and by exemplifying aspects from the more theoretical lectures (e.g., the Multi -Action Plan (MAP); Bertollo et al., 2013, 2016), I worked alongside the operatives as I explored with them their chain of behaviours and cognitions that formed their optimum performance chain. As an example, I used examples of shooting under pressure (Bortoli et al., 2012), while at the range, where we looked at and trained on different scenarios. We talked about and exemplified the individual differences of activation. This was important as each of us reacts to acute stress during training and combat, with emphasis on the CATS model (Ursin & Eriksen, 2004). Therefore, in line with PJDM, my own adaptability as a coach proved essential: I used different theories and alternate modes of educational delivery - all with the aim of finding ways to make performance psychology content useful and meaningful to each operative (Collins et al., 2022).
6.2.8 Coaching session

In addition, had hoped to be able to conduct several individual coaching sessions, but as time was limited, I had the opportunity to put in one individual performance coaching session together for the troop. An introduction to coaching was given with a special emphasis on the method (Collins et al., 2022) as this was a novel way of thinking about performance development for the operators. An introduction to the 15 item Cognitive Mediation Beliefs Questionnaire (CMBQ), (Turner et al., 2021) with explanation was handed out. The operators were invited to reflect on and if there was time, to fill it out prior to the session. Relating to performance psychology, they were invited to talk about any subject that they might think on. The sessions lasted from 30 minutes to 90 minutes and were conducted over a three-day period.

6.3 Data collection

6.3.1 Interviews

Due to the longitudinal nature of the study (Yin, 2018), it became clear that more than one interview would be beneficial. Early in the research process, as a part of obtaining ethical clearance and whilst developing the semi-structured interview schedule, the scope of the research project became clear. Accordingly, a pilot test of the interview schedule was conducted. As the timeline shows in Figure 6.1, there were three interviews conducted over the course of the period. These interviews were all semi structured, in-depth interviews with an approximate duration of 30-60 minutes. The interviews were conducted three times with each participant. Each interview (with all participants) was conducted in an informal, though private setting. This allowed the interviews to be structured in a way that enabled respondents to be guided, so that their observations and thoughts emerged, but at the same time provided them with the flexibility to talk freely (Braun & Clarke, 2006).
The final interview (not pre-planned) was a group-based follow up that focussed on the response to crisis mission, and what skills they had used, and if they had any additional experiences. In addition, a follow up with a member reflection process was conducted.

6.3.2 Example of the structure of the semi-structured interviews

All interviews followed the same procedure as visualised in appendix C.3. In the first interview I started with a timeline (Chapter 4). Next, open-ended questions were posed, giving the respondents the opportunity to share their opinion and create personal meanings in response to the question at hand (McGrath et al., 2019). At the same time, I had the possibility to follow up on interesting data with probes and stimuli to that were aligned to the overall purpose of the exploratory longitudinal case study.

Interviewing operators that I had trained and lived with for an extended period, there was several important aspects to consider. As described in Chapter 3, whilst focusing on maintaining the perspective on the operators’ unique experiences, I was acutely aware of conducting a performance psychology program in which myself as the researcher was heavily invested, and this necessitated taking extra care not to impose my own thoughts and ideas onto the operators (McGrath et al., 2019). I also emphasised the importance of the operators’ opinions and reflections, as it was crucial as to get their personal opinions of what performance psychology could entail for the future of SOF training and operations. This also included open ended questions that invited them to reflect on both positive and possible negative aspects of an embedded performance psychology program.

The first interview, prior to the performance psychology training commencing, focused on understanding important events in the participants’ career. A timeline approach was used to try and understand transformative moments, starting with the selection and subsequent training pipeline. The second part of the interview focused on their own thoughts around mental preparation for deployments.
Exemplar questions included:

- “Can you identify some important moments, like when you experienced in/out of control and significant events in your career and indicate when they happened?”
- “Could you describe your experiences with performance under pressure/handling of stress and how you prepare yourself for such situations?”

The second interview commenced after the work up period was finished, before the deployment, and focused on understanding the operators’ reflections after the work up, once they were familiar with the embedded performance psychology package.

Exemplar questions included:

- “To what extent did the training change or develop your mindset related to performing under pressure? Could you elaborate?”
- “To what extent did the training change or develop your mindset related to performing under pressure? Could you elaborate?”
- “What was the one lecture/training that you learned the most from? What did you learn specifically?”
- “In hindsight, what has been your most valuable experience in this training?”

The third interview was conducted after they had returned from the deployment and had taken their obligatory leave. The idea was that their experiences had matured, to a degree, and to get further insight to their reflections around performance psychology for SOF.

Exemplar questions included:

- “To what extent did performance psychology from the training before the mission help you perform on the mission? Could you elaborate?”
- “How do you perceive the culture in the unit when it comes to expressing vulnerability?”
As explained earlier, the fourth interview became possible due to a change of circumstance (response to a crisis mission) and focused on if there was anything during their experience on that mission that could be added into the whole project as important discoveries. It was done in a group setting with A, B, C, D, E, F, G where the main question was:

- “With regards to your experience now, what would you consider be important to add with regards to performance psychology for yourselves/SOF?”

Lastly I conducted a member reflection with a follow up with each participant on the complete chapter in its early stages.

In addition, due to the sensitivity of the research, the command read through and permitted release to my supervisory team.

**6.4 Data analysis**

**6.4.1 Reflexive Thematic Analysis**

An RTA (Braun & Clarke, 2006, 2019) was conducted to analyse the qualitative data, adhering to the Big Q guidelines from (Braun & Clarke, 2022), as discussed in Chapter 3, and used the big tent criteria as guidelines (Tracy, 2010). This especially since the whole project focused on understanding what the operators’ experiences were in relation to the intervention phase of this study, based on their answers in the interviews (Braun & Clarke, 2006). With my experiences from Chapter 4, and with the monumental task of conducting a reflexive thematic analysis manually fresh in my memory, I considered using the data tool (Lumivero NVivo 12) to facilitate the analysis. However, after downloading and familiarising myself with the program, the choice was made to conduct the analysis manually. As the manual approach was something I had already done and given my experience, I believe it is mistaken to believe that data extracts compiled in figures and tables necessarily increases the quality of the analysis. RTA is not a quantitative approach, and researcher subjectivity is a part of the
research, which is “conceptualized as an art not a science” (Braun & Clarke, 2022, p. 9), and that “presentation of data extracts in tables should be avoided” (Braun & Clarke, 2022, p. 20). Reflecting upon these considerations and implications, I made my decision not to use a data tool; first and foremost because it made sense to me in the way I viewed my research.

To have a framework to work to, while still being able to be creative, I followed the six steps as described by (Braun & Clarke, 2006) – In other words the same method as employed in Chapters 4 and 5. However reflecting evolutions of their work a different reporting structure was used, namely the ten steps of reporting an RTA (Braun & Clarke, 2022, p. 8).

As my skills had developed from my sniper research, I normally spent one (long) working day on each transcription, and in total it took about 21 days to finish the process.

Once I began to write the chapter, I spent extra time in understanding the ten steps as recommended by Braun & Clarke (2022) and decided to conduct tests where I traced back my higher order theme to the initial coding. This resulted in changing most of the themes when my “reflexive interrogation” phase ended (Braun & Clarke, 2022, p. 9).

The initial analysis was conducted over a three-month period from September 21 to December 21. In addition, my reflective diary (Braun & Clarke, 2013) was maintained and added to throughout the whole research process. It became a welcome, trusted tool that enabled me to revisit certain aspects of the data and the meanings and implications I derived from it; moreover, its regular use resulted in building upon reflections during the data analysis stage. In addition, my supervisory team functioned as critical friends in the process.

6.4.2 Integrity, trustworthiness and rigour

Building on my reflections in Chapter 3, and my now operational experience from Chapter 4 as both a researcher and performance psychologist in training. My own reflection process was very important, because the tempo and intensity in a workup can be extreme. As I
discussed in Chapter 3, my own background assists in certain areas (face validity of myself); however, without “phronesis” (Eikeland, 2008), and an established *practice* in it, I believe the intervention part of my investigation could have been undermined. Accordingly, I based my ongoing reflective process on informal chats with the operators and, as time progressed a mutual rapport developed. In short, I was able to get “on top of things” as a coach. Furthermore, my own practice with a reflective diary enabled me to tweak and tailor the interventions for the next day. As these operators are already *Combat* Olympians (Chapter 2) my approach was not about telling them what to do or sprinkle magic performance psychology powder and fix things; rather, it is a dialogical approach (Chapter 4). And naturally, the quality of the delivery was supported through the planning and execution process from my supervisors. In addition, member reflections were conducted as in previous chapters (Birt et al., 2016; Koelsch, 2013; Motulsky, 2021).
6.5 Results and specific discussion

6.5.1 Overview over key themes and sub themes

To be able to follow a flow, I present Table 6.3, an overview over the key and sub themes in the results and specific discussion sections:

Table 6.3

*Overview over key themes and subthemes*

<table>
<thead>
<tr>
<th>Key themes</th>
<th>Sub themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development under pressure</td>
<td>Development as an operator</td>
</tr>
<tr>
<td></td>
<td>Attitude towards challenges</td>
</tr>
<tr>
<td>Building a special operator</td>
<td>A community of practice</td>
</tr>
<tr>
<td></td>
<td>Training for the job</td>
</tr>
<tr>
<td></td>
<td>Experiencing combat</td>
</tr>
<tr>
<td>Performance psychology from the operator’s point of view</td>
<td>Increased understanding</td>
</tr>
<tr>
<td></td>
<td>The ability to share mental models.</td>
</tr>
<tr>
<td></td>
<td>The value of an embedded performance psychologist</td>
</tr>
<tr>
<td></td>
<td>From random to systematic</td>
</tr>
<tr>
<td>The mindset of a special operator during missions</td>
<td>Perceived effects of the performance psychology package</td>
</tr>
<tr>
<td></td>
<td>Handling the emotional load</td>
</tr>
<tr>
<td></td>
<td>Perceived effects of performance psychology under pressure</td>
</tr>
</tbody>
</table>

6.5.2 Key theme: Development under pressure- experience from selection

To become an operator in NORSOF, there is a rigorous selection and training process (Forsvaret, 2022). As discussed in Chapter 2, I would argue that the selection and subsequent training can be described as an experiential learning process. Not something you merely “endure” and then it is done, and you get to continue in the unit. I was very curious about how each operators’ experience had influenced their thoughts and behaviours towards performing and training. To understand and analyse what the operator needs in a performance psychology
program, it is vital to learn more about their thinking and how they interpreted different challenges in selection and training; specifically, how this training influenced their own thoughts and behaviours. This is both a common starting point for all the operators, and knowledge which is held in high regard and relates directly to the creed of the unit.

The first sub theme developed encompasses how their development took place under pressure. All participants commented on how they experienced their mindset prior to the selection:

**Sub theme: Development as an operator**

During the selection, my thought process was; no matter how terrible it becomes, it will only last a certain time. …and this is a good thing, because I learned that no matter how many bad periods, it fluctuates a lot. And this is a good thing because I have learned that the hard periods, they pass. The down period only last for limited time (B)

Although the mental pressure is acute and emotions fluctuate a lot during the selection process, the strategy of a realistic mindset was utilised to withstand the pressure, both internal and external. Thus, no matter how difficult it becomes, other more constructive emotions will arise and change the operator’s outlook. Furthermore, maintaining that mindset, but still accepting the fact that things will at times be bad. Continuing with (B) “I had promised myself I would never withdraw voluntarily…I had promised myself this” (B). Moving to (C):

Hmmmm. When I started on the selection I felt like, there is no reason anybody else is better than me. I felt well prepared. Then during the selection, I see a lot of people that are very fit, with a very good fitness foundation. I did not have that and during the selection I became unsure of my own abilities to make it through. I felt like I underperformed during the initial selection phase (C).
Nevertheless, (C) continues to grind through it and explained a different experience as the training pipeline continue: “But as soon as we come to the next phase, I discovered that even if my physical fitness isn’t the best, I have other skillsets, and the physical fitness is not that important anymore” (C).

A commonality in their mindsets seems to be the development of self-efficacy (Bandura, 1997), which the operators discovered through watching themselves in relation to the situation they were in. Due to their exposure to challenging circumstances – finding, then using their own wherewithal increased their confidence. However, (D) reflects on how he failed selection on the first try, and how that was a personal defeat that initiated another approach; “I was really motivated to try again. I spent the year training every day. …I was ready when the selection started. I was not scared of anything. I conducted the fitness tests two times per week, the whole year through” (D).

Nevertheless (D) did not regard it as a low in his career. On the contrary, he used this experience as motivation to set himself up in a way so that he could train every day until the time for selection came.

Moving over to the second sub theme:

**Sub theme: Attitude towards challenges**

It was no way I was going to quit. So, I turned it around and thinking like that, it is impossible not to make it, right! …I am intelligent, my fitness is good, I am not going to quit. …People psyche themselves out when they are alone in the tent. Instead of, like, just put down the work and don’t quit (A).

As the data describes this operator changed his perspective-his attitude and was able to perform. Participant (E) describes how he picked up on a phrase, where he asked himself a question: “What do you want right now, and what do you want the most” (E). The ability to
change perspectives with regards to his motivation, linking it to a timeline. This resulted in a reappraisal of both the emotions and what he pays the most attention to – the thought. Furthermore, (E) states:

Parts of the selection was a rollercoaster mentally. …The bergens were extremely heavy and the marsh was wet. I thought to myself, it is now or never, I don’t care anymore. …Then on another evolution, it was a blizzard in the middle of the summer, and a gust of wind came upon me, there I was with snow in my face and looked out over the terrain. I felt like a lion on top of that mountain. Goosebumps. I knew I was going to make it. Like a surge through my body. I knew I was going to make it. I believed in myself, I just grinded through (E).

(E) describes becoming indifferent and perhaps almost giving up. Still, he pushes through. And that cognitive choice creates an opportunity. Perhaps it can be described as an existential discovery within himself. And I believe this discovery is only made possible by his previous choice of not giving up.

All the participants described their selection and training pipeline as filled with enormous pressure, both externally and internally. At the same time their preparation had given them confidence and, even if they experienced it differently the common descriptor is how they developed under extreme pressure. An acceptance that it is difficult at times, but it is not lasting forever. After the initial selection, this is a shared experience.

6.5.3 Developments on the job – post selection

In chapter 2, I discussed how there are drawn comparisons between military and the world of elite sports. Although there are some superficial similarities, the context of both the training SOF goes through, and the mental fortitude needed are very different. Therefore, the second key theme developed encompasses building the SOF operator:
6.5.4 *Key theme: Building the special operator*

*Sub theme: A community of practice*

The most important (factor) for us is training together so that we are a team, everybody knows each other’s strong and weak sides. That we know each other in a way so we can function well together. That team stuff is important for us to work together because that is what we are going to do (B).

This describes the emphasis the operators put on training hard together, and what I find interesting is how they also focus on both sides of the coin, both weaknesses and strengths to be able to function better together to perform optimally. In this type of selection and training, it is impossible to fake it, as discussed in the first section. They get exposed, and through this exposure choices are made.

*Sub theme: Training for the job*

Furthermore, the second sub theme emphasise that the training they conduct regularly are what creates performance:

It is through training that you build confidence and all those things. …I have not actively conducted any mental training, and I don’t feel we have had a focus on it, but I do not feel that it has been missing either. …I have never been deployed and didn’t feel prepared (F)

And very interesting before the performance psychology package commenced, they never had any explicit focus on mental skills, but at the same time they do not feel it is lacking either. However, perhaps integrating performance psychology can make the best even better.

Moving to the last sub theme:
**Sub theme: Experiencing combat**

Experiencing combat, covering the arena where they are expected to perform, and that they are never to special for the basics:

> It is like, in combat, I am calm for some reason, same thing when I return fire, focusing on trigger reset, and proper sight alignment after the recoil, did he go down? Where did I hit him? Things like that. …” I always fall back focusing on the basic stuff I learned during the initial training over 10 years ago (A).

To continue, (G) puts his own perspective into words: “As a warrior, things are not always lined up. It is not always you who decide the time and the place, and there is no second place”. (G)

I believe it is very important to understand what the operators themselves are saying and how they understand their jobs (at the end of the day) – particularly in relation to the performance culture, their community of practice. (G) explains how he considers the seriousness of his own profession. This thread is picked up and continued by operator (E):

> If it comes to it, where I must shoot a terrorist if he threatens one of my mates or a pregnant mother, it’s either him or someone better than him. I can live with that. So, I am prepared. If such a situation develops, where shooting the terrorist is the right choice with all the training we have done, the action is motor skills (E).

Summed up in very few sentences, I believe (E) succinctly encapsulates the enormous complexity that SOF operators are expected to handle. First it is the cognitive aspect and understanding the situation. What is going on right now, what might happen in the immediate future, and what could occur further down the road; on this basis – actions - with consequences are taken. Bearing in mind the rules of engagements (am I allowed to take the shot), cognitive
functions must be turned into actions in seconds. As discussed in previous chapters, as a researcher and a performance psychologist in training, there is a genuine need to understand what is going on in their context. (E) presents that once the cognitive, rational decision has been made, it is down to the training to execute that shot. The confidence in their skill set. There seems to be a deliberate cognitive process occurring, combined with the basic motor skills that are a part of the SOF operator’s “toolbox”. The importance of being deployed and being tested under exacting conditions:

It is our job, like, if you have an apprentice and he only gets to splice cables indefinitely, he becomes bored... …After some years just training and infinite stuff that’s needs to be done, and you don’t feel at your best, because of all the things we need to do. But on a mission, where there are set tasks, I am back as an [øksekaster] (axe thrower)², (D).

In many ways I believe this describes the performance culture of these operators. They are volunteers in perhaps the most extreme profession there is, and they want to be tested and to perform in their arena. In between missions, they are constantly working on different skill sets, like the specialist generalists they are (Chapter 2). When it comes to how they think about preparation, all the operators describe how selection and training is the most important aspect of their preparation.

To summarise, they do not feel that there is something missing, but they always focus on getting better. Continuing with the words of (E) “we will never be perfect, but we must always chase becoming perfect”. Furthermore, (B) describes, “Lot of what we do in our work is like a mental preparation. We are deliberately put in situations or scenarios we might encounter. All the things we do, we prepare for what me might face” (B). Turning to operator (G),

---

² “Axe thrower” is a common Norwegian term in elite units, referring to experienced warriors
“Sometimes I can be afraid of what is coming, or at least think certain thoughts, become a bit worried about some stuff, but it is important to trust your basic training. I have a big faith in our unit” (G).

Using the sports analogy, like Olympians, the drive to compete is probably what motivates the approach needed to perform at the highest level. However, what instills this motivation appears to be complex. Another very interesting aspect is their ability to reflect upon their own performance in different circumstances. Operator (C) explains;

In situations where I am moving, I get a let out for my adrenalin, and in that context, I feel like I perform well. What I have noticed in situations where the physical demand is less, I can start to shake. I don’t have a problem with that because I know what it comes from (C).

Operator (A) describes how he is a “super nerd” in everything that they do:

Like pistol shooting. I don’t divide into five parts, it’s much more, like where are my eyes looking, when does my hands meet, where to I start the trigger pressure, how straight is the line I move the gun in (A).

The focus they have on their own performance is probably magnified through their culture, their community of practice, building upon their selection and training, at the same time it seems they can understand subtle differences. (A) continues to explain

During a training and when we have competitions, I was really hyped, but in combat it is like the opposite, I am calm and focused. ...I have an insane competitive mindset. I think it negatively impacts my performance in competitions, as opposed to life and death situations. I am much calmer then.

This notion is supported by operator (F),
If you are going to conduct a shooting stage, you already think about it beforehand, where you are going to shave off time, because that is the goal. But, in a real shooting scenario the thought process is more complex (F).

After this initial interview to understand their background, mindsets, context, culture and not at least their different perspectives the performance psychology package commenced.

6.5.5 *After the performance psychology package, before deployment*

At this point, with reference to Figure 6.2. the performance psychology package was delivered, and they were preparing to deploy on yet another mission.

6.5.6 *Key theme: Performance psychology from the operator’s point of view*

The key theme, Performance psychology from the operator’s point of view clearly indicates how the operators experienced the performance psychology training as positive. The first sub theme provides some insight:

**Sub theme: Increased confidence**

I feel like I have done some of this before, subconsciously, and through this training I feel like I have gotten a confirmation on what I do is correct. I don’t feel like I learned any revolutionary stuff, but it is good to put it into words and it makes it easier to explain it to others, that has been difficult earlier (D).

Related to previous experience amplified by the performance psychology package.

Operator (E) continues with his experience:

I feel like I have developed myself mentally and that I have grown in several years [in experience] in a very short time. It comes back in everything I do. I do not need much time to focus, my decision making is sped up, because I have confidence in my own abilities. I experience more control in chaotic circumstances than I experienced earlier. I know what type of reactions that are natural for me, and that what I interpreted as
fear is just awareness of my surroundings. This has led to an improved confidence in demanding and dangerous situations. I feel good, I feel good now. In everything I do. Confident and in control (E).

The second sub theme encompasses how they immediately embraced the Shared Mental Model’s concept.

**Sub theme: Sharing mental models**

Now it has become something that is the back of the head, either because you come to the whiteboard a couple of times during the day or remind us of it, okay, then it is with us a couple of sessions, then you forget some, fall back to old habits, then you learn something new, and then I take some more time and put some extra effort in my preparations, before I go through the task and make sure everyone shared the same mental models (F)

Probably because in a high-performance group, this is already a natural occurrence to some degree. However, even among high performers expressing what you know, how you got there and what this indicates are difficult. I would suggest that the from tacit to explicit-challenge is something that needs focused work to elicit.

**Sub theme: The value of an embedded performance psychologist**

Thirdly, the experience of the integrative approach as a performance phycologist is also that it sharpens their focus on what is relevant for performance development in their context. It is experienced as added value.

For me personally it has been very good. I believe the most imortant thing is that you are here, and we trust you, which makes it flow in day-to-day training. To be able to
do it in a way that doesn’t remove focus from our primary tasks but integrate the training into it. The most important thing is that we can focus on it, we haven’t had anything with that kind of focus before (F).

Turning to (B),

I think the way you have joined us has been good. The variation between an active and passive role. …I think it has been good and I think if you just came in with a single lecture, we would not have the same kind of trust and got to know us in the same way. I believe it would have been difficult to accept you as a part of the team. So, to achieve that kind of trust I believe you must be integrated. That is what I believe (B).

Operator (D) underlines the important of my continued presence, not only at the start of a session, but also at the end of one, providing positive feedback, because they sometimes forget.

I feel that it is important for you to be there, like in the end of a session. At the start also, just to give a reminder. But giving us some credit also, an outsider who follows us and delivers positive feedback. We are not particularly good at that part. Maybe it stems from selection if you don’t hear anything, you are doing good enough. Not everybody gets all the solutions, and then it builds confidence, maybe easier to get into the team (D).

**Sub theme: From random to systematic**

The fourth sub theme indicates that the experience the operators had putting previous mental processes into a repeatable system was an important factor for them.

Achieving a clearer mental picture of what I want to achieve, sensing my breath, my focus on that part has increased, and the most important part, I am repeating the sequence every time. As opposed to previous episodes, where it was random
However, as discovered in both Chapter 4 and 5, individual differences of the most important aspect differ. Operator (A):

My expectation was that I would get some confirmation on the stuff I already do. That is a good feeling. Just as an example, with working memory overload. I have never had a word for it …like a confirmation that I do the right things (A).

(A) brings forth an example on working memory overload (Yun et al., 2010). That he has experienced this, but never had a word for it or a deeper understanding of the concept. The training gives him a confirmation on the fact that he is doing the right things (making tacit knowledge explicit). Again, against the Combat Olympian analogy, they already train and perform at the highest level. Expanding knowledge could create even better training (and subsequently performance in the arena). As explanations are sought and perhaps a causality in optimal or sub-optimal performance is better understood and subsequently explained. Furthermore, it portrays organic growth of knowledge (Kolb, 2015). A good solution shared increases shared mental models (Espevik et al., 2006). Moving from randomness to a systematic approach is regarded as an important step when on the road to mastery. This is further supported by operator (A), where he puts forward the example of imagery, and how he evolved and expanded his practice:

But to view myself from the outside, not just from my own eyes, I have never done that before. Like, if I am shooting a stage, I look from my perspective out of my eyes, but I have never imagined myself from the outside perspective and corrected my mistakes, [before the performance psychology training] (A).

Operator (F) describes “For me, what I take with me is imagery, mental rehearsal and breathing. Hmmm. Yes. It is something I have knowledge about, and know how to do, but I have not had any system on these skills” (F).
Amongst the operators there are of course different people, and therefore they experience the performance psychology package in different ways. As the sniper study. They agree upon the importance of integrating these skills in their training. And it should be concrete and directly applicable. To summarise with operator (A) words: “It’s like in a medic case, you don’t need to know all the muscles in Latin to stop the bleeding. You just need to know what to do” (A).

6.5.7 The coaching session

As described in section 6.2.9, I was able to conduct a single coaching session, lasting from 30 minutes to 90 minutes due to the tight time schedule. The FEPSAC (2023) ethical standards were implemented, in addition to my research ethics. Further building on my experience in applied coaching. Following confidentiality, I will not discuss anything that was talked about, nor the initial themes of the session. However, and somewhat naturally the themes varied, and expanding well past performance in the combat arena. What I also discovered was that the many concerns also evolved around non-performance issues, strengthening my hypothesis about the importance of a holistic approach. I asked the operators how they experienced the session immediately after it was conducted:

Table 6.4

Statements from the operators immediately after the session ended (n=7)

<table>
<thead>
<tr>
<th>After the coaching session</th>
<th>Statements from the operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>How did you experience the coaching session? (n=7)</td>
<td>“I am glad you are here. This makes us better operators. I am sure of it. Thank you”</td>
</tr>
<tr>
<td></td>
<td>“It feels good being challenged on my thoughts and behaviours”</td>
</tr>
<tr>
<td></td>
<td>“I believe this is very important”</td>
</tr>
<tr>
<td></td>
<td>“This concept is really good, healthy for the brain”</td>
</tr>
<tr>
<td></td>
<td>“You give us stuff to really think about, You talk our language and use your own references and experiences”</td>
</tr>
<tr>
<td></td>
<td>“It helps put my thoughts into words”</td>
</tr>
<tr>
<td></td>
<td>“This was great”</td>
</tr>
</tbody>
</table>
As the statements display, the experience was deemed valuable by the operators. In interview 2, after the performance psychology package, before the first deployment, the final question I asked was, if they had any reflections on the coaching session. All operators in unison reported it as valuable. Operator (G):

It is very good, because it what we focus the least amount of time on. We do some group “pep talks” if we do anything at all. Just feedback only happens once a year through scheduled talks, so this is very valuable (G).

Furthermore, this point was supported by (E) “Everybody is different, and a coaching session opens up for that individuality” Turning to Operator (F) “I did not prepare for the coaching session, but I was challenged to think deeply during the session” This in turn enabled him to put into words aspects he been pondering in for a long time, and he experienced that aspect as the most important one in the session.

This also ended the embedded performance psychology interventions, and the work up was finished. The next time we met was after the initial deployment, and they have had a well-deserved brake. Then I conducted the third and presumably last interview, until the critical response mission kicked in.

6.5.8 Reflections during and after both deployments

This section is an example of how the SOF operators perceives their jobs. The first mission they were deployed to was described as “uneventful”, meaning that there were circumstances which meant that they would not perform their basic skillset. The first part of the interview was conducted after they have returned home, and after their obligatory leave, they/we started work again. Then, suddenly, based on external events and their recent knowledge of the operational area, they responded to solve a critical mission in Kabul. As both missions were (as it proves) realistic, I chose to integrate the last interview in its natural order and study them together. As such, this section covers reflections and perceptions based
on the special operators’ combined data after both missions, the planned and the additional response to crisis mission.

6.5.9 Key theme: The mindset of a special operator during missions

As the key theme was generated, the mindset of a special operator during missions, this was developed from three sub themes generated across the data set. The first sub theme is describing how they experienced the first mission:

Sub theme: Perceived effects of the performance psychology package

What can I say, it contributed, but it is an extreme performance culture already, how much more it has evolved I cannot give you any exact numbers on, but that the focus has increased on these things is without a doubt. A lot. All the way. …In the theatre we were 100% focused on our tasks, and like, ok, we didn’t do any warfighting, but that is worse for us. It is much more difficult to maintain the mood and keep the guys going. So, I believe we were good at maintaining our focus on the important tasks when the situation was what it was, and this stuff has influenced our ability to do that, I certainly believe so (A).

Clearly not meeting the operators’ expectations, but still they had a job to do, and they experienced that some of the training we had done impacted their performance positively in that context as well. Continuing to the second sub theme:

Sub theme: Handling the emotional load

This seems to be something they have become increasingly more aware and appreciative of.

Hmmm. It seems like the newer guys have started to open earlier than before. With the guys who I have served with for 10 years or so, we know each other well. So, it is what we wanted, to understand this earlier, maybe it happens earlier now …it is no “pride” now if you know what I mean. It is the way it should be (D).
Sub theme: Perceived effects of the performance psychology package under pressure

As the last sub theme, I am able to get an insight into how an operator handles himself in a difficult situation under pressure:

I assisted in a medic case, and I was very conscious on the fact that I wanted to calm myself down and disregard everything else in the situation. I did not focus on my breathing initially, but on relaxing my muscle tension, lower my heart rate as much as possible, very conscious on that part, not letting myself be influenced. It helped focusing on my breathing and being aware of my emotions (E).

When the response to crisis mission kicked in, it seems that performance psychology training had a positive impact as well performing under pressure.

Operator (C) explains:

My feeling is that what we did in the work up together with you, very focused in that period has added on to our ability to perform. Both that we have that training and that it has increased our ability to put thought into words and have a different outlook on things. Increased awareness. I believe it helps the individual operator in increasing his self-confidence. And added to this, I believe that being able to put what we do and know from before, like, it’s good to train well and increase our competence but also our confidence (C).

Operator (B) believes that they did not feel they got to test themselves the way they had hoped on the first mission. At the same time, they felt that the whole troop was well prepared:

The guys were ready, maintained a good awareness on the readiness and on the mission in general. So, I believe that the training we did beforehand helped turn it up a notch, and a more conscious approach to the mission (B).
When the second, critical mission kicked in, (B) highlights his experiences of being able to stay calm under pressure and he noticed that he performed mental rehearsals as early as possible and was not surprised or shocked by the scenes that unfolded, he was prepared.

Operator (A) also describes in the last interview that he kind of lost the essence of what exactly contributed to what. This is, I believe that is a natural occurrence when practice has been integrated. (Klein, 2007; Kolb, 2015). Operator (E) describes how he felt they completed the first mission by maintaining their readiness status; “It is a major contribution to being professional. Increase in confidence, skills, both socially and what we do”. Their mindset was that they are ready for combat if someone wants to meet them; addressing the critical mission (E) explains that they accepted the situation and maintained a stoic calmness, and “I feel I have grown through the performance psychology program” (E). Operator (D) states; “Ehmmmm. We are a bit more conscious now. … worked well in the troop, and how we want to be perceived. Much of the stuff we went through, it kind of work’s better, those SMM [shared mental models], things become easier” (D).

It seems that the performance psychology training has increased their performance through developing cognitive aspects (Veenman et al., 2006), also similar to the sniper study. Another important factor became apparent as themes were generated, the importance of developing the emotional awareness, both internally and externally. Operator (C),

“Something I have never thought about before is what I learned about “putting on the brake” … After periods with a high activity level, I have become aware of my need to slow down. It is important to be aware of” (C).

This is supported by (G); “We share more than we used to”, and he says that he believes they see that it is an important factor, it is the human aspect that governs when the situation occurs.
Operator (A):

Yeees, now I don’t know if this is right, but we have talked a lot about shared mental models. It is good to get a word for that, we have always done it, but we have not talked directly about it or have had a direct focus towards this. We did not talk about it before, but we did it in a way [tacit]. Now we talk about it [explicit]. If you know what I mean. It is in a conscious and concrete way now, and one has only to mention SMM and then we are on target (A).

Opening for and training actively on the emotional aspect probably makes it easier to share ideas and thoughts earlier in both a tactical situation, but also in a more formal setting. This could imply that the level of trust in the group has positively increased. It could be an interaction between an increased level of trust and having learned methods to elicit SMM. As mentioned in Chapter 2 regarding SOF leadership, the team is important to find optimum solutions to complex problems. Another extremely important aspect is regarding mental health,

(E):

I experience talking about mental health as a taboo. I feel that we have lowered the bar to talk about this. I believe that is very important in a group that is going in combat together. That it has become a bit more natural to talk about these things that affect us every day. Big strong guys are not supposed to have feelings. That if something bothers you, it is seen as a weakness, and everybody want to uphold their image about being strong, with a degree of confidence. We have high confidence but, the aspect of talking about emotions to perform better is very important (E).

Performance psychology should be designed to the group and be holistic (Chapter 2). (F) “I think the troop was very comfortable in talking about emotions, or whatever the subject. It felt very positive.”
Returning to Chapter 2, and my initial thoughts about mental health and performance psychology, certainly strengthens this hypothesis.

6.6 Follow up and member reflections

To be able to understand more about how the operators’ experience of the training, and what they use at present, a follow up was conducted approximately 1.5 years after the case study was finished. As in Chapter 4, to be able to conduct the follow up such a long time after the interventions holds the potential to add value to the investigation, issues of recollection notwithstanding. A complete version of the chapter (up until and including section 6.6) was sent via encrypted email to each of the participants, with their individual codenames, the questions attached and a three-week period to read through, before I followed up via telephone. All the respondents (n=7) opted to answer.

1. Any comments on the chapter?

In sum, the operators thought it was interesting to read and a good description of the package. (E): “Very professional and easy to read. It is recognisable, the translations are spot on, a solid description of the program”.

(G): It is to the point and easy to read. Very interesting reading about the other participants and how they describe their thoughts and strategies. I also recognise myself in their descriptions. I am curious to see the conceptual development of this further, and how to integrate performance psychology in daily training.

(C): Your conclusions and opinions in the chapter mirror my own experiences of the program. I remember it as exclusively positive; it was not creating more noise or extra work in a busy work up period. Another factor is because we as a group had the possibility to train for a mutual goal - the mission – I think was an important factor regardless of the performance psychology interventions. At the same time, I believe that what you did was not
an insignificant contributor to this. We discussed a lot of the stuff we went through, also when you were not there, and we would not have done this if it didn’t produce an added value.

2. Today, what do you regard as the most valuable for you with regards to the performance psychology package?

The operators experienced the value of learning performance psychology in a systematic manner as important. The operators also comment on how they individually picked up on various elements individually and that they have developed their own versions of it.

(E): “I have become more mentally robust and conscious of my thoughts. I listen to my own mind and body and feel that I am more in balance now. In difficult situations I tend to utilise diaphragmatic breathing and it works well”.

(B): Looking back at what we did today, I still believe that this was a very good awareness and training for most of the troop. As you describe, for some this was a tacit-explicit thing, that our own methods and way of thinking were good. For others it represented learning methods that they did not now from before and were useful for them. For me, it has also made me more aware of the fact that athletes probably have learned some of these methods before, however it is not as easy or straightforward for people without that background from competitive sports. This can be of value in the selection and training pipeline. I still fall back to imagery as my go to method, At the same time I am probably more aware my own breathing, and I use that after the training with you.

3. Any additional comments, or things you want to say?

In this section a few operators had some thoughts:
To summarise their answers, it seems clear that the performance psychology package was received as a positive contribution to their training, and that they continue to utilise some the things we trained on together.

6.7 General discussion

The objectives for the investigation were:

1. Investigating the impacts from foundational SOF selection, training & culture for bespoke design of performance psychology.
2. Pilot testing the program described, seeking process and outcome divided into three brackets; before, during and after a mission, seeking the operators’ perspectives on the programs impact.

Firstly, and against my primary objectives, the integration of bespoke performance psychology in an embedded form was very well received. Looking at the follow up, the narrative evidence points to that this experience was consistent. This was underlined by the fact that they still use and continue to develop their own versions of the methods that makes sense to them. Compared to previous research and building on Chapters 4 and 5, this chapter presents a novel and unique insight into training and missions in a real world scenario, from the operators perspective.
The way the operators describe their selection shows how different they are as individuals based on how they articulate their experiences. However, it also brings forth some common denominators. My research suggests that the way in which the operators approach and cope with different types of stressors is vital to their success in passing the selection and the subsequent training pipeline. A viable theoretical explanation could be linked to Ursin & Eriksen's (2004) Cognitive Activation Theory of Stress model (CATS), especially highlighting that our brains can cognitively change the experience of the stressor(s) through “acts or expectancies” (Ursin & Eriksen, 2004, p. 570). On the other hand, from the operator’s perspective, it is very clear that they are not merely passive recipients of stress. Rather, they actively approach these situations with a commonality, both in action and cognitively. Building on this notion, and with reference to Chapter 2, it can accurately be described as an experiential learning process which enhances “the fact that learning is a continuous process grounded in experience” (Kolb, 2015, p. 39). Therefore, their journey forward can be explained through the development of personal self-efficacy because “what you believe you can do with what you have under a variety of circumstances” (Bandura, 1997, p. 37) builds on the importance of our perceptions.

On the other hand, the question emerges of where to fit other factors like confidence and motivation, which clearly also play an important role but are difficult to access. Based on my analysis, clearly, motivational aspects and motivation fluctuate throughout their selection (Deci & Flaste, 1996). Therefore, I would be sceptical about attributing passing the selection to any individual traits that can be measured in a meaningful way beforehand (Chapter 2) because the individual candidate just doesn’t know until he is in the situation. As with operator E’s example from his own selection.

Clearly, it is not so much about who you perceive yourself to be at the start of a selection, but the acceptance of what is going on, combined with a mindset of perseverance and
what could be described as the organic development of mental skills, where examples of self-talk and affirmations (Herzog & Deuster, 2014) visualisation and imagery (Holmes & Collins, 2001) are present. Some of these skills are probably developed beforehand (from sports or targeted preparations for selection) and then further developed through selection and training.

What clearly separates *Combat Olympians* from Olympians is the nature of the job (Chapter 2). As with the job of a sniper (Chapter 4), the unit’s warrior ethos is clearly pronounced through my analysis of the operators. They display reflection when it comes to the performance of their tasks and missions and articulate themselves clearly on difficult matters regarding life and death situations. What I regard as very important in this context is introducing a theoretical approach to the process of decision-making under stress, and more specifically, naturalistic decision-making (Klein, 2015), which was uncovered in Chapter 5. Based on my analysis, I would argue that this is significant. Firstly, having a solid empirical theory as a foundation, such as RPD (Klein, 1993), explores and outlines the implications of making decisions under “time pressure and uncertainty” (Klein & Wright, 2016), which further allows operators to interpret and build upon their own experiences. Importantly, RPD posits that intuitive decisions are based on previous experience and training. In turn, this enables experiential learning and training to engender the requisite levels of cognitive capacity necessary to operate and survive difficult situations. For example, you trust in your training and team efficacy (Bandura, 1997); in short, you know you have the needed skill set. Furthermore, the individual operator can utilise self-regulation techniques such as controlled breathing (Jerath et al., 2015) and self-talk (Hardy, 2006), using psychophysiological and cognitive techniques to adapt their physiology to support decision-making. At the same time, it provides operators with the knowledge of how to develop and maintain optimum motor skills (Magill & Anderson, 2014) and the surety that once the cognitive decision is made, their nervous system has been prepped to execute the skill optimally.
Secondly, as thoroughly discussed in Chapter 4, in working with these populations, we need to be able to provide a deeper understanding of optimum performance in combat situations. It is a question of life and death, and optimal performance in these situations increases the likelihood that the operators can solve complex missions and return home safely. Furthermore, what might be missing in performance psychology is the mental health continuum as well (Chapter 2). This is also exemplified by (E), where he experiences talking about feelings as somewhat of a taboo.

Thirdly, and as discussed in Chapter 5, performance could be linked to Dreyfus & Dreyfus’ (2005) five stages of developing expertise; in relation to this model, increased awareness and understanding of the individual operator and their team of their current skill level could assist in training, preparation and planning. Therefore, these theoretical constructs can be used to build and extend the inherent culture and established COPs that exemplify SOF (Li et al., 2009).

In relation to the performance psychology package and the way it was taught, unsurprisingly and positively, all the operators highlighted different, though complementary, aspects that made sense to them (Collins et al., 2022). The embedded approach seems to facilitate learning with a positive impact. I believe the experiential learning theory (Kolb, 2015) provides a methodological approach that naturally fits into the existing training environment and performance culture. When this method is combined with a coaching concept that allows for individuality but at the same time follows a structure, this can directly enhance the training output (Collins et al., 2022).

On the other hand, it could be that providing a more lecture-based approach would provide equal results in terms of these operator’s proficiency levels (Chapter 2). I would have to say, however, that based on my findings, spending time with the operators creates a level of
trust that I would argue is impossible to obtain through mere lectures on theory. Perhaps, especially for the coaching sessions, to be of value. Furthermore, being present allows for greater precision in applying content, both individually and for the team. The operators work in a practical environment on a wide range of tasks. Therefore, I would argue that the best practice would be to have a performance psychologist present “in the wild”, at least for extended periods of time, as they embark on their respective journeys bridging theory/practice.

When it comes to the different theoretical constructs taught, for example, operator F made sense of the Multi-Action Plan (MAP) model (Bertollo et al., 2016) and stated that it was simple and intuitive. On the other hand, E’s experience was that, although it made sense, it was not especially memorable. The importance of delivering a “deck of cards” (Collins & Macnamara, 2017) approach cannot be understated, as all operators have different needs. This coincides with my results in Chapter 4. Furthermore, all the operators highlight the importance of learning some of the basic mental skills as a system – as opposed to it being fragmented factors that are scattered around, poorly connected and related to an ill-developed mental schema.

The bread and butter for SOF operatives is to deploy on missions – this is where they derive their motivation to train, and especially their self-motivation (Deci & Flaste, 1996). It can be regarded as one of the most important factors and underpins research previously carried out on SOF operatives’ mindset (Dalgaard-Nielsen & Holm, 2019). The fact that the operators experienced that they performed better, as a team and individually, after a period of focused attention should not come as a surprise. The stimulus to performance could have been derived from my own operational experience as an outsider, just being present for a time and conducting training with them.

Alternatively, whether this is typical of all SOF groups or just this one is moot; it would seem like there is an acceptance of comrades sharing their perspectives and emotions
concerning training, operational, and personal matters. All these social and cognitive factors can contribute to enhancing individual and group skill acquisition chain (Dreyfus & Dreyfus, 2005) by increasing awareness of their respective roles in employing complex mental models (Espevik et al., 2006). Furthermore, the operators explain different examples of how they integrate different elements from the performance psychology package into their toolbox. Again, this could be an outcome of the “deck of cards” (Collins & Macnamara, 2017) approach and underlines the importance of individuality in the coaching process. Furthermore, and of equal importance, coaching the operators to create an environment where it is ok to talk about negative emotions is also long-term performance development instead of keeping it to yourself and adding to the allostatic load (Guidi et al., 2021; McEwen et al., 2012); being able to defuse in an informal setting amongst your peers is possibly one of the most important factors to reduce this load.

The findings from the single coaching session underline the importance of a holistic approach in performance psychology for SOF - in SOCOM, this practice is well established (Greene, 2019). Although there are few research-based papers to support this notion, several programs are underway and established in SOF within the NATO alliance, as discussed in Chapter 2. Worryingly, from my perspective, is the global focus on resilience (Chapter 2). However, displaying the findings from a single coaching session, as a researcher, I cannot present any causalities. Nevertheless, what I can present is an initial impression of the potential inherent benefits of implementing a performance psychology package using this coaching model. There are several reasons for this. It could enhance the learning experience in a performance psychology package, as my theoretical approach is grounded in PJDM (Collins & Collins, 2017; Martindale & Collins, 2007) and underpinned by both Kolb’s (2015) theories of experiential learning and research on self-efficacy (Bandura, 1997). Secondly, performance in a holistic manner is about more than just hard-core performance (Herzog & Deuster, 2014).
Coaching provides a neutral space where the focus is on the operator’s own process. Also, the biopsychosocial aspects can be addressed in this environment (Chapter 2). Furthermore, even if operators have normal or supernormal functioning (Greene, 2019), as discussed in Chapter 2, they are not Marvel Avengers. Clearly, they are masters of handling phasic stressors (Ursin & Eriksen, 2004), but the allostatic load (Guidi et al., 2021) is immense for SOF operatives (Satterly & Jackson, 2019). Therefore, waiting until symptoms of mental illness present - and then seeking clinical help is a sub-optimal solution, to say the least. I would argue that a holistic performance psychology program can alleviate some of these devastating effects. Lastly, the ethical difficulties for operators surfaced following the Afghanistan/Iraq wars (The Line, 2018). Providing regular coaching could result in dramatic, positive effects on the operators’ mental health and alleviate the combined effects of moral strains (Held et al., 2019) that are part and parcel of the job. However, I acknowledge that this assertion is perhaps premature and tinged with bias because of my own education and experiences and that further research into this field is warranted.

6.8 Limitations

As highlighted in previous chapters, all studies have limitations, and this study shares the limitations as described in Chapter 4. It was a small sample. I have not used a control group. Much of the work is based on self-report data, and the expectancy effect of the interventions must be allowed for, particularly since I spent so much time integrated with the team. However, as operator F highlights in the follow-up, he experienced the process as an objective one and that hopefully goes some way to addressing this shortcoming. As in Chapter 4, the philosophy, pedagogy, and teaching MST in this course are not standard in the NAF, meaning the novelty of the interventions itself could have influenced their motivation and interest in performing. In sum, further research is certainly warranted.
6.9 Summary and next steps

Based on my research, I would argue that a proper CC starts from the operatives’ selection and training pipeline. Developing a bespoke performance psychology package, in line with the unit’s culture and ethos, should be a first step (Martindale & Collins, 2007). Regarding the operator’s perspective and experiences with the performance psychology package - several factors are of interest and require further development. The operators experience the integration of performance psychology into their day-to-day training as a constructive contribution to their toolbox. Including overall development and subsequent performance in their arena. Importantly, all the operators are individuals, with different personalities, different life stories and different aptitudes. This should be regarded as a necessary and important, in the way performance psychology training is designed and delivered for these Combat Olympians. One size does not fit all. And it should not. With regards to the specialness of SOF and the fact that optimum performance is sought through bespoke solutions developed in an organic manner. In the next and final chapter my aim is to conclude so far and point the direction of future research.
7.1 Addressing the aim and objectives

As my research results suggest, the existing training and educational curriculum this thesis has investigated can be further improved through the implementation of bespoke performance psychology in both sniper training and for NORSOF. This thesis was divided into four distinct research processes. Therefore, reflecting on my aim for this thesis: To develop the foundation for a bespoke performance psychology package for Norwegian Special Operation Forces.

This aim was examined through the following objectives:

1) Exploring the specific and importantly unique challenges encountered when researching and consulting with Special Operation Forces (SOF).

2) An overview of the current state of knowledge on these ‘Combat Olympians’. Highlighting key differences between SOF and conventional forces, then look to provide a critique of the approaches used by practitioners to date.

3) Perspectives on where opportunities might have been missed and offer some suggestions for more impactful (and accurate) research and practice.

4) Examining the efficacy of a bespoke MST programme, based on pre-existing grounds, with domain-specific adjustments in an advanced sniper course. Investigating the participants perceptions of useful programme elements.

5) Investigating the use of ACTA as a way of understanding context specific demands of a complex task for SOF: High Altitude High Opening (HAHO) parachute jumping, and consequently identifying possible training applications using performance psychology.
6) Investigating the impacts from foundational SOF selection, training & culture for be-
spoke design of performance psychology.

7) To pilot test the program described, seeking process and outcome divided into three
brackets; before, during and after a mission, seeking the operators’ perspectives on the
programs impact.

7.2 An overview summary of findings

I started my thesis with an attempt to set the scene for my research. My experience has
awakened some questions I wanted to answer. I explained which moral and ethical difficulties
lie in the soldier's context and discussed how similarities and differences between sports and
the military context create possibilities and limitations. Possibilities lie in understanding what
makes optimal performance. However, limitations certainly are present when examining the
performance arena for soldiers in general and SOF in particular. I continued with a deep dive
into the domain of performance psychology for the military in general and SOF. Even though
many initiatives are underway in the NATO alliance, primarily for GPF, I argued that some of
these methods will miss their mark for SOF and can also be counterproductive in this regard -
especially with the growth and popularity of resilience-type programs, which are confusing
and lack empirical evidence in how to train for optimum impact.

Additionally, other pet concepts derived directly from sports are sub-optimal. Even
though concepts for training can be shared, I have shown that SOF should develop their con-
ceptual subset inside the domain of performance psychology. And this could improve perfor-
mance holistically. I contended that existing research needs to be improved in developing pro-
grams to enhance performance. Finally, I identified some critical areas for further research
that could help move the field of bespoke performance psychology further for this special and
unique population.
Linking my research to philosophical and methodical considerations, I continued to my empirical chapters. I started implementing a performance psychology package using MST based on pre-existing grounds in an exploratory case study on an advanced sniper course. This investigation assisted me in understanding the perceived impact of the effects on MST in a specific, demanding and stressful context. The results proved interesting to advance the field. One aspect was how differently the SCs used MST and how they integrated this training into their performance.

Interestingly, but not necessarily surprisingly, the conscious application of slow, controlled diaphragmatic breathing and imagery protocols were agreed upon as standard go-to tools for performance. This was supported both from the instructors’ perspectives and the SCs themselves. Furthermore, the value of learning and developing a systematic way of conducting these techniques is applicable. This could indicate that the overall philosophy of delivery is essential to consider, and it noted that being able to test, learn, improve and apply worked well. In short, and similar to many applied settings, demonstrating performance gains was essential for credibility (Pecen et al., 2018). Secondly, recording the instructors' opinions through their observations on what constitutes the spectrum between sub-optimal and optimal performance assisted me in being able to draw valuable learning as to what works, why and how. For the sniper candidates specifically, the introduction and implementation of MST positively impacted all performance markers associated with the course. In addition, following up with the snipers and determining how they had used their training in combat supported the contention that learning, and development had indeed taken place.

Moving from one performance arena to another extreme, namely MFF and HAHO parachute insertion, in Chapter 5, I utilised a context-specific and developed version of ACTA to understand the cognitive demands in this advanced insertion method. The analysis provided
insight into the relationship between motor and cognitive skills, opening avenues for integrating performance psychology in training. Once again, the focus was on the organic development needs of the operator. Dividing the task into distinct phases made it possible to go in-depth about the challenges and strategies to move from a novice to an expert level (Dreyfus et al., 1986). In addition, suggestions for bespoke MST was suggested for further exploration.

Moving forward, as the previous empirical chapter was focused solely on training, however demanding, a vital aspect of my research was the ability to understand how operators experienced the effects of a holistic, bespoke performance psychology program whilst they were training in preparation for a mission and following it.

I conducted a longitudinal explorative case study in my last empirical chapter, functioning as an embedded performance psychologist. I was able to pilot applications for the whole game. My final empirical chapter gave me an in-depth understanding of how the operators perceived my introduction to their company and the effect of the training package. They experienced the performance psychology package as a unique and novel contribution, assisting them in strengthening both what they already know and allowing each operator to reflect on their professional practice. Narrative evidence points to the team aspect, where utilising different methods increases the ability to share mental models (Espevik et al., 2006).

Regarding the individual aspect, several factors surfaced from the MST part of the package. Enhancing the findings from my sniper chapter. In sum, creating a space for individual applications was well received by the operators. In addition, the coaching session was experienced as a welcomed addition in their context. Finally, the performance psychology package was regarded as an essential contributor to both team and individual performance in situations ranging from low-stress to high-pressure situations. Therefore, bespoke performance psychology training is a good fit for an established performance environment in NORSOF.
My research has provided me with an insight and understanding, both as a researcher and a performance psychologist in training. Important both in an ethical context, but also morally. Developing the foundation, ranging from a CC to delivery and evaluation by the operators themselves. Integrating a bespoke performance psychology package with the overarching philosophy that it should be done with and for them, not on them (Collins & Kamin, 2012).

### 7.3 Implications for practice in NORSOF

Based on my empirical studies, there is sufficient research and experience, in other words knowledge, in place to start the design and development of a bespoke performance psychology package for NORSOF, if this is desired by the command.

1. *Let selection be a journey into the crucible*

Based on my findings both from the literature in Chapter 2 and my empirical studies, I would argue that where in the training pipeline to start teaching/implementing performance psychology is very important. If it is implemented early it could benefit operatives by enabling them to have the experience of learning by developing their own self-efficacy (Bandura, 1997). I do not have a definite conclusion here, but what strengthens this notion is how the operators narrated their selection experience. Based on Chapter 4, once a proper level in the basics is present, performance psychology will not be yet another “thing to master” and based on the results in Chapter 5, MFF training would be an excellent arena in which to implement the basics of individual performance psychology. However, if it is underpinned by a suitably tailored philosophical approach to learning and development and embedded organically in the culture and context of SOF.
2. **Apply a practice centred approach**

As these *Combat Olympians* are at different levels in their own personal development, maintaining an operator centric approach and assisting them in their learning journey is vital. Employing an operator centric approach as an overarching philosophy will probably give better effects of the training in both the short and long term. As explained by the operators themselves, the effect of being present and showing genuine interest creates trust and builds rapport between the operators themselves and with the provider of performance psychology.

3. **Developing and applying holistic performance psychology**

Performance psychology should not be regarded as an adjunct, nor as a magic potion, but based on my research I would recommend that it is integrated as a natural part of a professional environment. Developing the holistic perspective is important on the spectrum from well-being to optimum performance. Furthermore, the biopsychosocial aspects (Chapter 2) amplify the need for a bespoke approach. As research moves forward our understanding of stress has improved—understanding both mediators and catalysts (Guidi et al., 2021). This holistic approach implies that it should focus on individual and team approaches. And as an interesting note, even if only one coaching session was conducted, I believe this is a cornerstone for the future in the development of the holistic approach. As an important factor, based on their level as *Combat Olympians*, Coaching can provide a solution-oriented space for reflection and subsequent action that sits very well with the operator’s overall development in aspects such as mental health, performance and career longevity.
4. **Humans are more important than hardware**

In sum, this project came to life from a bottom-up approach from senior operators seeking improvements in their training and preparation prior to a planned mission. If any of the findings in my research are to be implemented and developed, it must become a top-down decision to implement performance psychology for NORSOF, allocating the necessary resources to provide the operators with this expanded toolbox. Although not measurable in numbers and statistics (immediately), based on the operators' reflections, it holds the potential of being an important contribution in their professional environment.

### 7.4 Strengths and limitations

It was vital for me to voice the opinions of the operators, regarding them as the receivers of such training and experts in their field. Their positivity was inherently based on the work as being context and culturally-specific. Overall, the strengths can be summarised by the performance psychology package focused on applied concepts *for them and with them* - *developing “their” CC*. My own experience and background provided me with access to this performance sphere. My combat experience has matured me as a human and practitioner, enabling me to apply the concepts holistically. Based on the narrative evidence in my empirical chapters, the operators' experience shows that the integration of performance psychology is a critical aspect previously unexplored in the context of NORSOF.

There are, of course, several limitations in my research. Firstly, it has been a “one-man show”, meaning my own biases and experiences have undoubtedly influenced the questions I have asked. I was afforded the access and the confidence my operational experience brings in selling performance psychology to these individuals. Even though I have upheld the ethical aspects of my research and judiciously employed my reflexivity (Finlay, 2002) and phronesis (Kristjansson et al., 2021) - my experience and background are a double-edged sword. In
Chapter 2, I examined the field's current state based on open-access literature. Still, it is not a systematic review following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021). In Chapter 4, I did not use a control group; most of the data is based on self-reporting. The expectancy effect is present in my own military experience as a sniper.

Furthermore, I did not focus on the issues of snipers working in pairs, which probably influenced many of the tests that the snipers conducted. In addition, in Chapter 5, conducting the ACTA (Militello & Hutton, 1998) as a team is usually recommended to handle the procedure and amount of data efficiently. My research is also specific to one of the units within NORSOF and does not necessarily transfer to the other operational combat units. In Chapter 6, looking at the whole game, weaknesses similar to those in the other empirical chapters are present. In addition, the expectancy effect is probably more significant due to the time spent with the operators.

### 7.5 Future directions for research and applications of performance psychology

Depending on the impact and interest my thesis attracts, several avenues would be interesting to develop further. Based on my research, a natural next step would be to continue the performance psychology package presented in my thesis and develop the concepts further through qualitative and quantitative methods.

Based on the results, there are several shortcomings that would provide more knowledge for SOF and the field of performance psychology in general. Firstly, researching the biopsychosocial aspects (Blascovich et al., 2004) would be an exciting starting point. In my thesis, although coaching was limited to one session, it would be interesting to investigate how holistic performance coaching can be integrated and developed within SOF based on feedback. As described in Chapter 2, operators are not superhumans even if they are super-
functioning. Even if the operators themselves are aware of this, I am still determining the extent to which their (larger) organisations are. Another area identified in my research is MFF. As outlined in Chapter 5, integrating performance psychology in the MFF course could improve the ability to perform along the set progression criteria. The work of Martindale and Collins in Crime Scene Investigation (CSI-2014) is an excellent example of the potential for cognitive augmentation of current training.

Moving over to other applied perspectives, the aspect of accelerated expertise (Hoffman et al., 2022), quicker completions and interpretations of Cognitive Task Analysis could be beneficial when “deadlines are looming and that require skilled personnel to perform the work” (Hoffman et al., 2022, p. 166) which for SOF (Chapter 2) is the name of the game. Furthermore, developing proficiency scaling for specific tasks, like MFF, could be an exciting method to further streamline the operator’s development.

A challenge moving forward might be who should deliver performance psychology in an SOF/elite military context. As explained in Chapter 2, some practices are currently delivered comparatively uncritically. The universal focus on resilience and its derivatives is one such consequence. Secondly, providing pet concepts directly derived from sports is another example. However, on the one hand, having operational experience might get you in the door. However, this experience does not necessarily make the individual a better performance psychologist/performance coach.

On the other hand, not having an extensive background will create a knowledge gap in their game, especially in SOF. I believe there is a middle ground here, where the most critical question to be answered is whether the service provider is willing to understand the group’s needs beyond the obvious. In other words, conducting a thorough case conceptualisation (Martindale & Collins, 2007) focusing on the athlete, “sport”, and the social context. Another
essential factor that surfaced in my research was how important the operators believed my integration into the team was. A genuine interest in the client and activity is mandatory, regardless of background; I think this is something most will agree upon. The direct implications are, once again, a thorough case conceptualisation but also an initial orientation and ongoing development of awareness into the ‘business’ of SOF.

The next challenge is how the senior leadership views this. I am sure not from a lack of interest but from a lack of time to understand what performance psychology can contribute to, perhaps because they have yet to experience it. Another aspect is that performance psychology can be delivered to SOF on a limited schedule. Of course. Moreover, will it improve the overall performance? As I presented in my research, this is likely suboptimal because of the operators’ skill level. As an example, you can have a seminar about SMM, but if it is not taught in the context (in the wild) to which it belongs, giving enough time to test, tweak and repeat, I believe the effects of the time spent might not be worthwhile (Chapter 2). There are nuances, but here is the dichotomy as I view it: Either the unit acknowledges the need and takes the necessary steps to implement fitting to their context, or they do not. That commitment is, in fact, much more important than the background of the performance psychologist. To place this in a broader context, the extent to which the management/leadership accept, endorse and encourage the messages. Following that question, who conducts the research? Moreover, how is the research implemented? There is, of course, more than one solution to that question. However, based on my research, bespoke applications are essential. To summarise, to expand knowledge and as presented in this thesis, research must consider the culture, context and job.

In the future, and based on the above, following my own pragmatic approach. I will continue to develop a performance model as a baseline to understand the basic concepts of my
research. The military performance model displays an idea of how performance psychology can be adapted to the different levels of soldiering in a Norwegian context.

Based on these thoughts I have created a suggestion for a performance model:

**Figure 7.1**

*Military performance model*

I created this model to try and explain the relationship between organic development and the integration of performance psychology, meaning the overall aim of an intervention at different levels.

The starting point is with the foundational mental and physical health skills in our conscript service. This involves learning the basic steps of self-care, both physically and mentally. Of course this can be a challenge in an early phase of military training, however, learning the value of sleep, nutrition, social support and constructive perspective can be regarded as valuable for further development.
As a natural next step, presenting an overview of the theoretical foundations of self-efficacy (Bandura, 1997) and then begin to develop through exposure to environments and scenarios. Confidence grows from exposure, and in exposure, failing is also learning (Bandura, 1997). Moving further in military service to different schools and/or professional units, experience is gained, and flexibility and adaptability can be taught theoretically and organically developed (Ward et al., 2017). For those who want to move into the elite sphere, specific MST and performance psychology packages can be tailored accordingly (Chapters 4, 5 and 6), integrating the skills towards reaching our human potential in a context of holistic performance psychology for the military.

To exemplify, at a conscript level, performance psychological methods can be used to educate soldiers on what constitutes a combat mindset with reference to Chapter 4: How to prepare, perform during stressful situations, and keep going even if you want to give up. Even reverse-engineering from the mentality of successful SOF selection can be presented (Chapter 6). Furthermore, the mindset that in every situation you encounter that is novel, there is something to be discovered. In modern (Norwegian) society, I believe conscript soldiers need to be taught this mindset to a larger degree than before, based on anecdotal experience. I contend that performance in a military context can only be obtained through adequate exposure (context/level of soldiers). Moving upwards in the triangle to a professional level of soldering or at schools in the services, understanding and developing flexibility and all it can encompass, i.e., NDM, flexecution and adaptive expertise (Ward et al., 2017) as core concepts. Lastly, specific interventions can be conducted at the elite and SOF levels as they have the skill level needed to adapt, i.e., MST, in their current practice. Looking at the right side of the model, being able to move up the ladder in a structured way could increase the precision in what we (as responsible officers and NCOs) are trying to teach them.
To summarise, I point out possible avenues of approach emanating directly from my research and put these thoughts into the context of the NAF. The central aspect is always being able to take the time needed to understand the group you are working for and adjust the performance psychology interventions appropriately. The military performance model can perhaps be used as a guide towards optimal performance.

7.6 Conclusion

Following my pragmatic approach, the conclusion mirrors the input. In this context, this refers to my participants, the Combat Olympians of NORSOF. From my empirical chapters, several important conclusions can be drawn. The most significant conclusion I would highlight is that the overall aim of the thesis has been accomplished; based on the conclusions from Chapter 2, where the need for a bespoke concept of performance psychology was argued for, I have created research-driven foundation upon which it is possible to deliver a performance psychology programme for NORSOF. In my thesis, the effects of integrating MST on the sniper course improved performance on all outcomes measured. Implementing the ACTA study provided knowledge into the previously unknown cognitive demands in HAHO, with insights into how performance psychology can assist in this type of training. The final chapter outlined a unique and novel project of embedding a performance psychologist in a combat squadron to be part of their training and preparation to learn more about the perceived effects of integrating performance psychology.

Lastly, for SOF, and indeed for all soldiers, Humans are the most important asset on any battlefield. Moreover, I have provided a multifaceted tool to enhance this contention further.
References

https://doi.org/10.1007/s12671-021-01682-w

https://doi.org/10.1177/0269215509334834


https://doi.org/10.1016/j.amjsurg.2019.12.022


Kagge.


Current Views, Contradictions, and Future Directions. 
*Frontiers in Psychology, 8*, 823. 
https://doi.org/10.3389/fpsyg.2017.00823

Road: Optimizing the Pathway to Excellence. *Frontiers in Psychology, 7*. 
https://doi.org/10.3389/fpsyg.2016.01482

The most fundamental, simple and complex principle or a mere copout? *Sports 
Coaching Review*, 1–21. 
https://doi.org/10.1080/21640629.2022.2154189

Collins, L., & Collins, D. (2017). The foci of in-action professional judgement and decision-
making in high-level adventure sports coaching practice. *Journal of Adventure 
Education and Outdoor Learning, 17*(2), 122–132. 
https://doi.org/10.1080/14729679.2016.1227717

Collins, D. & Kamin, S. (2012). The performance coach In S. Murphy (Ed.), *Handbook of 
Sport and Performance Psychology*. Oxford: Oxford University Press. 692-706

The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety, 18*(2), 
76–82. https://doi.org/10.1002/da.10113

Cornum, R., Matthews, M. D., & Seligman, M. E. P. (2011). Comprehensive Soldier Fitness: 
https://doi.org/10.1037/a0021420

and mixed methods approaches* (Fifth edition). SAGE.
https://doi.org/10.1080/10413200.2018.1492471

https://doi.org/10.1177/0095327X18755109


https://doi.org/10.1176/appi.ajp-rj.2016.110505

https://doi.org/10.1097/SLA.0000000000003573

https://doi.org/10.1080/10413200.2010.500606

https://doi.org/10.1080/00332747.2020.1768787


https://doi.org/10.1007/s10615-016-0590-5


Shared Mental Models and Operational Effectiveness:
Effects on Performance and Team Processes in Submarine Attack Teams.

*Military Psychology, 18*(sup1), S23–S36.

https://doi.org/10.1207/s15327876mp1803s_3


https://doi.org/10.1037/1528-3542.7.2.336


A group randomized control trial to test the efficacy of the Road to Mental Readiness (R2MR) program among Canadian military recruits. *BMC Psychiatry, 19*(1), 326.

https://doi.org/10.1186/s12888-019-2287-0

FEPSAC, last accessed 30.05.2023.


https://doi.org/10.1177/146879410200200205


Forsvarets spesialstyrker. last accessed 2023.03.05. Forsvaret.no

https://www.forsvaret.no/jobb/forsvarets-spesialstyrker


Teachers College Press.

https://doi.org/10.1080/08873267.2012.643720

https://doi.org/10.3389/fpsyg.2019.01523

https://doi.org/10.1177/0145445503256322

https://doi.org/10.1007/s10111-018-0502-2

https://doi.org/10.1080/00336297.2013.773525

https://doi.org/10.1037/cpb0000131


Henley, M. K. (2016). Dance Psychology for Artistic and Performance Excellence:

Jim Taylor and Elena Estanol. Human Kinetics, 2015. 299 pages; $34.95 (paper).


https://doi.org/10.1080/15290824.2016.1174813


https://doi.org/10.1177/070674371105600504


https://doi.org/10.1207/s15327876mp1804_5
https://doi.org/10.4097/kjae.2017.70.6.601


https://doi.org/10.3389/fpsyg.2019.02964

https://doi.org/10.1007/s10484-015-9279-8

https://doi.org/10.3102/0013189X033007014


https://doi.org/10.1037/a0016755


https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4945173/


https://doi.org/10.1016/j.jarmac.2015.07.001


https://doi.org/10.1109/21.31053
https://doi.org/10.1109/MIS.2003.1200735


https://doi.org/10.1037/0022-3514.37.1.1

https://doi.org/10.1177/160940691301200105


https://doi.org/10.1080/02701367.1995.10607656


Lumivero NVivo 12 software

https://lumivero.com/products/nvivo/


https://doi.org/10.3402/meo.v15i0.4846

https://doi.org/10.3389/fpsyg.2021.654836


https://doi.org/10.1123/tsp.25.4.511

https://doi.org/10.1111/j.1540-5850.2009.00921.x

https://doi.org/10.1136/jramc-2018-001047


https://doi.org/10.1123/tsp.2020-0048


UK Army. (2021, December 1). *Ranger Regiment*: *What we know about Army’s new elite force*. Ranger Regiment: What we know about Army's new elite force


Appendices

A.1. Ethical approval Chapter 4 & 5

A.2. Ethical approval Chapter 6

A.3. Local permission Norwegian Armed Forces

B.1. Participant consent form Chapter 4 & 5

B.2. Participant consent form Chapter 6

C.1. Interview guide Chapter 4

C.2. Knowledge Audit and Simulation Interview (Norwegian) Chapter 5

C.3 Interview guide Chapter 6

D.1. Booklet Chapter 6
3 July 2020

Tynke Toering/Christian Ytterboel
School of Sport and Health Sciences
University of Central Lancashire

Dear Tynke and Christian

Re: BAHSS Ethics Committee Application
Unique Reference Number: BAHSS2 0111

The BAHSS ethics committee has granted approval of your proposal application ‘Human performance enhancement: Developing and testing a new system for military mental skills training (MMT) for the Norwegian Armed Forces’. Approval is granted up to the end of project date.

It is your responsibility to ensure that

- the project is carried out in line with the information provided in the forms you have submitted
- you regularly re-consider the ethical issues that may be raised in generating and analysing your data
- any proposed amendments/changes to the project are raised with, and approved, by Committee
- you notify ethicsinfo@uclan.ac.uk if the end date changes or the project does not start
- serious adverse events that occur from the project are reported to Committee
- a closure report is submitted to complete the ethics governance procedures (Existing paperwork can be used for this purpose e.g. funder’s end of grant report; abstract for student award or NRES final report. If none of these are available use e-Ethics Closure Report Proforma).

Yours sincerely

Douglas Martin
Deputy Vice-Chair
BAHSS Ethics Committee

* for research degree students this will be the final lapse date

NB - Ethical approval is contingent on any health and safety checklists having been completed, and necessary approvals gained.
Ref: CYTT16092021 Amendment

Chris YTTERBOEL
Moray House School of Education and Sport

Date: 04th October 2022

Dear Chris,

Title: Human performance enhancement: Developing and testing a new system for military mental skills training (MMT) for elite units in the Norwegian Armed Forces.

The School of Education and Sport Ethics Sub-Committee has now considered your request for ethical approval for the studies detailed in the above application.

This is to confirm that the Sub-Committee is happy to approve your application and the amendment submitted in October 2022 that the research meets the School Ethics Approval criterion for this particular project. A standard condition of this ethical approval is that should any amendment, or deviation from the original protocol outlined in your application need to be made to carry out or continue your research, please notify the Ethics Sub-Committee at MHSES-Ethics@ed.ac.uk

The Committee also needs to be notified if there are any unexpected results or events once the research is underway that raise questions about the safety of the research.

Should you receive any formal complaints relating to the study you should notify the MHSE Ethics Committee immediately by email to MHSES-Ethics@ed.ac.uk

Yours sincerely,

On behalf of:
Dr Fiona O’Hanlon
Director of Ethics
Tillatelse til å innhente opplysninger i og om Forsvaret til forskningsformål

1 Bakgrunn

2 Døring
Vurdering av søknader om tillatelse til å innhente informasjon i og om Forsvaret til forskningsformål er regulert av Bestemmelse om utlevering av personopplysninger til forskningsformål og gjennomføring av spørreundersøkelser, fastsatt av sjef HRAvedlingen i Forsvarsstaben 1. mai 2018. I henhold til punkt 2.3 og 2.4 i denne bestemmelsen er det en forskningsnemnd oppnevnt av sjef FHS som behandler søknader om tillatelse til datainsamling i Forsvaret. Kriterier og rettsgrunnlag som skal legges til grunn for vurderingen er omtalt i punkt 4.1 og 4.2. Forskningsnemnda har vurdert din søknad som tilfredsstillende i henhold til gjeldende krav.

3 Vedtak
Søknad om tillatelse til å innhente informasjon i og om Forsvaret til forskningsformål innvilges. Tillatelsen gjelder til prosjektslutt 1. juni 2025.

4 Vilkår for tillatelsen
Det er kun gitt tillatelse til innhenting av det datamaterialet som fremgår av søknaden. Data hentet fra Forsvaret skal ikke benyttes til andre formål enn det aktuelle dottorgradsprosjektet. Ved prosjektslutt skal alle data hentet fra Forsvaret slettes. Det skal sendes sluttmeldung til FHS vedlagt aktuelle publikasjoner. Sluttmelding sendes til datautlevering@fhsmil.no
Participant consent form

Version number & date: (per study)
Research ethics approval number: BAHSS2 0111

Title of the research project:
Human performance enhancement: Developing and testing a new system for military mental skills training for the Norwegian Armed Forces

Name of researcher(s): Christian Ytterbøl

Please initial box

1. I confirm that I have read and have understood the information sheet dated (per study) for the above study, or it has been read to me. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that taking part in the study involves an audio recorded interview.

3. I understand that my participation is voluntary and that I am free to stop taking part and can withdraw from the study at any time without giving any reason and without my rights being affected. In addition, I understand that I am free to decline to answer any particular question or questions.

4. I understand that if I withdraw from this study data collected prior to my withdrawal will be retained but no further data will be collected.

5. I understand that the information I provide will be held securely and in line with data protection requirements at the University of Central Lancashire.

6. I understand that signed consent forms and original audio recordings will be retained in the Norwegian Military Academy until August 2025

7. I agree to take part in the above study.

8. I agree to the use of anonymised quotes in publications

__________________________  ____________  ____________________
Participant name          Date                Signature

__________________________  ____________  ____________________
Name of person taking consent  Date                Signature

Principal Investigator    Student Investigator
Tynke Toering            Christian Ytterbøl
Gamle Bomansvikvei 36
+31640008287
+4794988560
B.2

Participant consent form

Research ethics approval number:
CYTT16092021 Amendment

Title of the research project:
Human performance enhancement: Developing and testing a new system for military mental skills training for elite units the Norwegian Armed Forces

Name of researcher(s): Christian Ytterbøl

Participant ID:

Please initial box

1. I confirm that I have read and have understood the Participant Information Sheet dated 27.09.2022 for the above study, or it has been read to me. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to stop taking part and can withdraw from the study at any time without giving any reason and without my rights being affected. In addition, I understand that I am free to decline to answer any particular question or questions.

3. I understand that if I withdraw from this study, all data will be deleted.

4. I agree to the use of anonymised quotes in publications

5. I agree to my interview being audio recorded

6. I understand that relevant sections of my data collected during the study may be looked at by individuals from the Sponsor (University of Edinburgh), where it is relevant to my taking part in this research. I give permission for these individuals to have access to my data.

7. I understand that signed consent forms and original audio recordings will be retained in the Norwegian Military Academy until the research is approved, then deleted.

8. I understand that my anonymised data will be stored until the research is approved and then deleted as regulations given by the Norwegian Defence University College ethical board. The absolute latest date is August 2025.
9. I agree to take part in the above study.

____________________________________   ______   ______________________
Participant name    Date   Signature

____________________________________   ______   ______________________
Name of person taking consent    Date   Signature

**Principal Investigator**
Prof. David Collins

**Student Investigator**
Christian Ytterbøl
Gamle Bomansvikvei 36
+4794988560
### CHAPTER 4 – Interviews with soldiers

<table>
<thead>
<tr>
<th>Sections + estimated time</th>
<th>Question</th>
<th>Probes</th>
<th>Stimuli</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive information (5 min)</td>
<td><strong>What ‘open’ question do you need to ask to achieve this purpose?</strong></td>
<td><strong>What ‘open’ question can I ask to get info on the things I want to know if they don’t seem to understand the main question? Or if they don’t provide enough detail in their answer?</strong></td>
<td><strong>If they still don’t give me the information that I’m most interested in, then what can I ask them to directly comment on?</strong> (To get what we are looking for)</td>
<td><strong>What do you want to know or find out?</strong></td>
</tr>
<tr>
<td>Intro (20 min)</td>
<td>Why did you apply for this course?</td>
<td>How old are you? For how long have you served? At what level? Do you hold any educational or other professional qualifications? If so, what and to what level?</td>
<td>Demographic + background info. Informal start to the semi-structured interview.</td>
<td></td>
</tr>
<tr>
<td>Training (10 min)</td>
<td>Could you please draw a graph of your performance during course? Could you identify for me when you performed best and worst? How were these instances (best and worst performance) related to pressure? Could you also indicate at what moments you feel you learned most in terms of dealing with pressure? What did you learn from these?</td>
<td>Can you identify some important moments, like when you experienced in/out of control and significant events and indicate when they happened? What did you learn from these?</td>
<td>So that would be here…and here…? (point at graph) Could you describe what happened? What did you learn from these moments?</td>
<td>Transformative moments. Below the surface. How/Why did xxx happen?</td>
</tr>
<tr>
<td>Reflections after course (25 min)</td>
<td>How did you experience the mental skills training during this course? What method(s) worked best for you?</td>
<td>How do you perform under pressure? (worst/best) What percentage of personal preferences?</td>
<td>What where you most satisfied with regarding your own performance?</td>
<td>How did they think/act to perform in demanding situations during the course?</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Related to the graph you’ve drawn, to what extent did mental skills training help you perform? Could you elaborate?</td>
<td>• In which situations did you feel a lot of pressure?</td>
<td>• Why/How did you achieve this?</td>
<td>• Were there any moments you were dissatisfied with your performance? How did you deal with this?</td>
<td>• What do they think afterwards? Which reflections stands out the most?</td>
</tr>
<tr>
<td>• To what extent did mental skills training hinder your performance? Could you elaborate?</td>
<td>• Cake diagram of mental skills with percentage of personal preferences.</td>
<td>• To what extent did the course change or develop your mindset related to performing under pressure? Could you elaborate?</td>
<td>• How do they experience their own development when it comes to mental skills and how to perform better? Are there distinct phases? Preferred methods?</td>
<td></td>
</tr>
<tr>
<td>• What was the one lecture/training that you learned the most from?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• In hindsight, what is your most valuable experience on this course?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total of 60 minutes. Allow for 75 minutes.
CHAPTER 4 – Interview guide focus group interviews

<table>
<thead>
<tr>
<th>Sections + estimated time</th>
<th>Question</th>
<th>Probes</th>
<th>Stimuli</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong>&lt;br&gt;(5 min)</td>
<td>What are your thoughts about this week?&lt;br&gt;How do you think the course went?&lt;br&gt;How did the soldiers perform?</td>
<td>What positive experiences did you have in the course this week?&lt;br&gt;Any negative experiences?</td>
<td>If they still don’t give me the information that I’m most interested in, then what can I ask them to directly comment on? (To get what we are looking for)</td>
<td>Intro, get people talking</td>
</tr>
<tr>
<td><strong>Performance under pressure</strong>&lt;br&gt;(10 min)</td>
<td>• What do you see/notice/hear from those who perform best under pressure?&lt;br&gt;• Could you contrast these things with the ones who seem to perform worst under pressure?</td>
<td>• How did the soldiers perform in general and when under pressure?&lt;br&gt;• Could you identify any differences between those who performed well and those who didn’t?</td>
<td>• What separates the top performers from the rest?</td>
<td>How do the soldiers perform under pressure? What singles out the best performers and how does this potentially relate to MMT?</td>
</tr>
<tr>
<td><strong>Behaviours related to performance under pressure.</strong>&lt;br&gt;(15 min)</td>
<td>• What are the most important factors you have observed this week in relationship with performance under pressure?</td>
<td>• Did you note any specific situations where the soldiers seemed to feel pressure?&lt;br&gt;• Did you observe any specific behaviours related to such situations?&lt;br&gt;• Did the soldiers speak to you about pressure situations and/or indicated they used specific mental skills? If so, could you elaborate?</td>
<td></td>
<td>Situations that elicited pressure and overt behaviours in such situations.</td>
</tr>
</tbody>
</table>
| Mental skills use under pressure. (15 min)                                                                 | • To what extent did you observe or hear anything from the soldiers which suggest mental skills use when under pressure? Could you elaborate? | • What mental skills did the soldiers seem to use?  
  • Did you observe any skills use?  
  • Did they mention any skills use?  
  • In which situations did they use the skills? | • What effect does mental skills use have?  
  How do you know that? | Specific mental skills observed |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MMT development (15 min)</td>
<td>• What would you change to make military mental skills training (MMT) even better suited as an integrated part of this week?</td>
<td></td>
<td></td>
<td>What development may look like and how we can improve the development and integration of MMT in regular training.</td>
</tr>
</tbody>
</table>
|                                                                                                            | • How do you suggest you can see improvements and what does improvement in performance under pressure look like?  
  • Any other observations you might think would be valuable for further development of MMT?  
  • Anything you would like to add related to MMT?                                                                 | - What changes do you see, or do you think you will see when soldiers improve their performance under pressure?                                                                                                                                          |                                                                                                                                                                                                 | |

Duration 60 minutes.
## CHAPTER 6 – A. Interview guide initial interview

<table>
<thead>
<tr>
<th>Sections + estimated time</th>
<th>Question</th>
<th>Probes</th>
<th>Stimuli</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>What ‘open’ question do you need to ask to achieve this purpose?</strong></td>
<td><strong>What ‘open’ question can I ask to get info on the things I want to know if they don’t seem to understand the main question? Or if they don’t provide enough detail in their answer?</strong></td>
<td><strong>If they still don’t give me the information that I’m most interested in, then what can I ask them to directly comment on? (To get what we are looking for)</strong></td>
<td><strong>What do you want to know or find out?</strong></td>
</tr>
</tbody>
</table>
| Descriptive information (5 min) | - How old are you?  
- Rank  
- For how long have you served? At what level?  
- Do you hold any educational or other professional qualifications? If so, what and to what level?  
- Military medals? | | | Demographic + background info. Informal start to the semi-structured interview. |
| Time Frame (20 min) | - Could you please draw a timeline of the highs and lows in your career so far, from when you started in the military until today?  
- Could you point out where and explain how these moments would relate to demanding circumstances (combat) as a sergeant?  
- Related to the previous questions, to what extent do you believe that combat is extreme in terms of mental demands? Why? | - Can you identify the periods in your career in which you performed best/worst and draw these on a timeline?  
- Can you identify some important moments, like when you experienced in/out of control and significant events in your career and indicate when they happened?  
- To what extent do you believe that these experiences of being in/out of control is related to mental demands? Why?  
- So, that would be here…., here…. here….? (point at timeline) Could you describe what happened? | | Important events in participants’ career. Transformative moments. How/Why did xxx happen? |
| Mental preparation for training/missions (20 min) | • How do you prepare yourself mentally for a task/mission?  
• Could you describe your experiences with performance under pressure/handling of stress and how you prepare yourself for such situations?  
• In your opinion, what kind of training do you feel is the most important for you to prepare you for a mission?  
• How do you know you are ready for a mission?  
• How do you know your colleagues are ready for missions?  
• Anything to add? | • Why do you do it this way? Or if you do not specifically prepare mentally: could you explain the reason for this?  
• What specific exercises or types of training prepared you for performance under pressure/handling of stress?  
• In your opinion, what is the value of mental skills training integrated in regular training for you as a sergeant?  
• Could you describe what you think and feel when you feel you’re ready for a mission?  
• Could you describe what you think, feel and hear when you know that your colleagues are ready for a mission? | • In your opinion, what is the difference between an athlete and a warrior?  
• Try to get an understanding of participants’ views around and use of mental skills.  
• How did they train?  
• How do they approach MST?  
• How conscious is it? |

Total of 45 minutes. Allow for 60 minutes.
Chapter 6 – B. Interview guide follow-up interview after training courses/ before missions

<table>
<thead>
<tr>
<th>Sections + estimated time</th>
<th>Question</th>
<th>Probes</th>
<th>Stimuli</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training (10 min)</td>
<td>What ‘open’ question do you need to ask to achieve this purpose?</td>
<td>How did you prepare for this course? Could you please explain why you did it this way or why you did not specifically prepare?</td>
<td>If they still don’t give me the information that I’m most interested in, then what can I ask them to directly comment on? (To get what we are looking for)</td>
<td>What do you want to know or find out?</td>
</tr>
<tr>
<td></td>
<td>• How did you prepare for this course? Could you please explain why you did it this way or why you did not specifically prepare?</td>
<td>• What specific exercises or types of training prepared you for this course?</td>
<td>• What specific exercises or types of training prepared you for this course?</td>
<td>Try to get an understanding of how the soldiers prepared for the course.</td>
</tr>
<tr>
<td></td>
<td>• How important is it to be well prepared for you and could you explain why?</td>
<td>• Mental aspect present?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How important would you say mental preparation is for you and could you explain why?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What specific exercises or types of training prepared you for this course?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reflective after course (20 min)</td>
<td>What ‘open’ question do you need to ask to achieve this purpose?</td>
<td>How did you experience the mental skills training during this course?</td>
<td>If they still don’t give me the information that I’m most interested in, then what can I ask them to directly comment on? (To get what we are looking for)</td>
<td>What do you want to know or find out?</td>
</tr>
<tr>
<td></td>
<td>• How did you experience the mental skills training during this course?</td>
<td>• What method(s) worked best for you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What method(s) worked best for you?</td>
<td>• In which situations did you feel a lot of pressure/get stressed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To what extent did mental skills training help you perform? Could you elaborate?</td>
<td>• How did you perform under pressure? (worst/best)</td>
<td>• What where you most satisfied with regarding your own performance?</td>
<td>How did participants think/act to perform in demanding situations during the course?</td>
</tr>
<tr>
<td></td>
<td>• How did you experience the mental skills training during this course?</td>
<td>• What role did mental skills play in such situations?</td>
<td>• Why/How did you achieve this?</td>
<td>What did they think about mental skills after the course? Which reflections stand out the most?</td>
</tr>
<tr>
<td></td>
<td>• What role did mental skills play in such situations?</td>
<td></td>
<td>• Were there any moments you were dissatisfied with your performance? How did you deal with this?</td>
<td>How did they experience their own development when it comes to mental skills and how to perform better? Preferred methods?</td>
</tr>
</tbody>
</table>
- To what extent did mental skills training hinder your performance? Could you elaborate?
- What were the most demanding situations in the course?
- How do you believe this course has prepared you for the next mission?
- To what extent did the course change or develop your mindset related to performing under pressure? Could you elaborate?
- What was the one lecture/training that you learned the most from? What did you learn specifically?
- In hindsight, what has been your most valuable experience on this course?

Anything to add?

Total of 30 minutes. Allow for 45 minutes.
# Chapter 6 – C. Interview guide follow-up interview after missions

<table>
<thead>
<tr>
<th>Sections + estimated time</th>
<th>Question</th>
<th>Probes</th>
<th>Stimuli</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation for mission (10 min)</td>
<td><strong>What ‘open’ question do you need to ask to achieve this purpose?</strong></td>
<td><strong>What ‘open’ question can I ask to get info on the things I want to know if they don’t seem to understand the main question? Or if they don’t provide enough detail in their answer?</strong></td>
<td><strong>If they still don’t give me the information that I’m most interested in, then what can I ask them to directly comment on?</strong> (To get what we are looking for)</td>
<td><strong>What do you want to know or find out?</strong></td>
</tr>
<tr>
<td>Reflections after mission (20 min)</td>
<td>Based on the training course before the mission, did you do any specific mental preparations? Could you please explain why you did it this way or why you did not specifically prepare?</td>
<td>What specific exercises or types of training prepared you for this course? Mental aspect present?</td>
<td></td>
<td>Try to get an understanding of how the soldiers prepared for the course.</td>
</tr>
</tbody>
</table>

- To what extent did mental skills training from the course before the mission help you perform in the mission? Could you elaborate?
- To what extent did the mental skills training from the course hinder your performance in the mission? Could you elaborate?
- Could you describe some demanding situations in the mission?

- In which situations did you feel a lot of pressure/get stressed?
- How did you perform under pressure? (worst/best)
- What role did mental skills play in such situations?

- How would you describe your unit’s perspectives on

- What where you most satisfied with regarding your own performance?
- Why/How did you achieve this?
- Were there any moments you were dissatisfied with your performance? How did you deal with this?

- What did they think about mental skills after the course? Which reflections stand out the most?

- How did they experience their own development when it comes to mental skills and how to perform better? Preferred methods?
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent did the mission change or develop your mindset related to performing under pressure? Could you elaborate?</td>
<td></td>
</tr>
<tr>
<td>How do you perceive the culture in the unit when it comes to expressing vulnerability?</td>
<td></td>
</tr>
<tr>
<td>How do you conduct after action revues? Are there any emotional debriefs?</td>
<td></td>
</tr>
<tr>
<td>In hindsight, what has been your most valuable experience on this mission?</td>
<td></td>
</tr>
<tr>
<td>How will you implement this experience into your training and other routines?</td>
<td></td>
</tr>
<tr>
<td>Do you perceive that there is specific attention for emotional wellbeing in your unit?</td>
<td></td>
</tr>
<tr>
<td>If you have to mention one thing that you learnt from being part of this mission, what would this be?</td>
<td></td>
</tr>
<tr>
<td>How will you use this learning experience in your further career?</td>
<td></td>
</tr>
</tbody>
</table>

Total of 30 minutes. Allow for 45 minutes.
Knowledge Audit:

1. Fortid og fremtid:
Ekspert har en slett forståelse av hvordan situasjonen utviklet seg og forstå hvor situasjonen går.

Spørsmål: Er det en gang du midt i en situasjon visste nøyaktig hvorfor det skjedde og hvor det gikk derfra?

2. Stort bilde: Ekspert forstår hele situasjonen og forstår hvordan elementer passer sammen.

Spørsmål: Kan du gi meg et eksempel på hva som er viktig for det store bildet av denne oppgaven? Hva er de viktigste elementene du må kjenne til og holde styr på?

3. Legg merke til: Ekspert kan oppdage signaler og se meningsfulle mønstre.

Spørsmål: Har du hatt opplevelser der en del av en situasjon bare «spratt» opp hos deg, hvor du la merke til ting som skjedde tidlig i prosessen? Hva er et eksempel?


Spørsmål: Når du gjør denne oppgaven, er det måter å jobbe smart på eller oppnå mer med mindre. Dvs. Triks som du har funnet spesielt nyttige?

5. Improvisere/Muligheter: Ekspert kan se forbi standard operasjonsprosedyrer og dra nytte av muligheter.

Spørsmål: Kan du tenke deg en gang du har improvisert i denne oppgaven eller lagt merke til en mulighet til å gjøre noe bedre?


Spørsmål: Kan du tenke deg en gang du skjønte at du måtte endre måten du presterer på for å få jobben gjort?

Spørsmål: Kan du beskrive et tilfelle der du oppdaget et avvik fra normen eller visste at noe var galt?


Spørsmål: Har det vært tider da utstyret pekte i én retning, men din egen dømmekraft fortalte deg å gjøre noe annet? Eller når du måtte stole på erfaring for å unngå å bli ført bak lyset av utstyret?

Simuleringsintervju

Forutsetningene i intervjuet er både og få frem hva respondentene tenker, men også hvordan de tenker med de forutsetningene de legger til grunn. Tanken er å komme forbi rene prosedyrer og forstå hva som er tankeprosessen.

1. Forberedelse (Ground prep phase)

Du kommer en dag senere for treningshoppene. Utstyret ditt er på stedet, og på morgenen du kommer, kommer du sammen med teamet som var der fra starten av treningen. Du kommer litt sent til briefen på grunn av problemer med utstyret. Hva prioriterer du, og i hvilken rekkefølge?

2. I flyet (Loaded in the plane)

Flyet taxer ut på rullebanen, du sitter på benken og gjør deg klar. Hva er det du tenker på og hvordan foregår tankeprosessen din?

3. Flyr mot harp (In flight)

Du får signalet om maske på og sjekk av utstyr. Hvordan foregår den prosessen hos deg, hva er det du legger spesielt merke til hos deg selv? Har du noen egne ritualer?

4-5. Utgang til fly (Exit to flight)

Natthopp, basic kit: Du går ut av rampedøren, og du føler at du er mer ustabil enn du burde være. Hva kan årsakene være? Hva gjør du?

Natthopp, basic kit: Du får skjermåpning, men syns det tar lang tid og det kjennes ut som en veldig hard åpning. Hva tenker du?

6. Flight, nav, comms:

Natthopp, basic kit: Utgang fra flight level 180, stick på 8 pax, du er hopper nr. 5. På den første kommunikasjonskontrollen oppdager du at høyden din er lik med hopper nr. 3. 1500 fot lavere høyde enn hopper nr. 4. Hele sticket har tilsvarende vekt. Hva gjør du?
Daghopp, basic kit.: Etter at skjermen åpner seg, er høyden god, hver hopper er der de skal være i henhold til planen. Du oppdager at GPS-ene din peker i forskjellig retning. Du ser LZ, Hva gjør du?

Daghopp, basic kit: Du er hopper 1. Etter å ha gått gjennom skyen og sett på bakken fra 4000 fot. Du kjenner ikke igjen bakken fra briefen. Hva gjør du?

Dagshopp, basic kit: Kommunikasjon langs hele rapporteringslinjen, men nå har du mistet kommunikasjon etter 10 000 fot med tåkete skyforhold. Høyde 4-5000 fot. Hva gjør du?

Natthopp, basic kit: Hopper 3, Altitude 3000 ft. Mistet kommunikasjon, ingen oppdatering fra stick leader, høyden din er litt høy, og du har ikke oversikt over retningen de andre hopperne lander i. Hva tenker du, og hvilke tiltak gjør du?

Daghopp, basic kit: Du går ut under skytaket, 3000 ft. Du ser at landingssonen er for langt unna ifølge den farten du har. Hva tenker du?

7. Downwind/Base leg.

Natthopp, basic kit: Hopper 1, Høyde 1000 fot, tåkete NVG, du tar den opp og ser det er skodde. Hva gjør du? Hvilke forutsetninger legger du til grunn?

6. Landing

Daghopp, basic kit: Veldig liten landingsson, du trodde vinden var høyere..

Oppfølgingsspørsmal:

På en skala fra 1 til 10, hvordan vil du subjektivt vurdere vanskelighetsgraden i hver fase?

Scenarioet fra helvete:

Hvis du skulle lage en case for å virkelig vise hva HAHO går ut på, hva ville du putte i casen?
Prestasjonspsykologi:


31.12.20. Veiledet av Professor David Collins.

Alle rettigheter tilhører forfatter.
Innledning

Dette arbeidsheftet deles ut som en del av forskningen på prosjekt nr 4. Lik et tre som består av dype røtter, en stamme og en krone kan også kunnskap ha den samme oppbygningen. Mitt mål er å bidra til å navigere i denne kunnskapen og det er viktig for meg å bygge solide røtter, som kan sies å være dyp kunnskap. Stammen er selve treningen, solid og konkret. Kronen er prestasjonen, det som synes og kan måles (på en eller annen måte). Et fagfelt som anvendt prestasjonspsykologi vil alltid være dynamisk og i utvikling, derfor er det viktig å basere utdanningen på både erfaring baserte og forskningsbaserte kunnskap. Idretten har forsket på dette i tiår, men det mangler en tilpasningsjobb til den militære konteksten.

Måten forskningen gjennomføres på er ved å bidra inn på enkelte treninger med bruk av teknikker og system for prestasjonstilnærming gjennom kognitiv mental trening og bruk av teori fra idrettspsykologi og motorisk trening.

Heftet er ment til å være et supplement til den praktiske treningen. Det er ikke en publikasjon. Det er ikke gjennomgått i detalj og er kun ment som en forsterkning til leksjoner ellers. Mitt PhD prosjekt har som mål og produsere et utdannings/arbeidshefte til bruk ved mental trening. Mitt store ønske er at det skal kunne på en bedre måte informere og stimulere til mental trening som en naturlig del av annen trening i en helhetlig tilnærming til trening, oppdrag og refleksjon/integrering, der mennesket står i fokus.

«NÅR ALLE TENKER LIKT, TENKER INGEN» WALTER LIPPMAN

Nesodden 01.01.21

NO fear eller KNOW fear?

Det kan være greit med en grunnleggende innføring i min beskrivelsesmodell av dette med stress og stresshåndtering. For å enda bedre kunne forstå hva som skjer med oss under økende grad av opplevd stress og direkte livsfare, er det viktig å forstå oss selv i en sammenheng. Våre naturlige reaksjoner er et resultat av evolusjonær biologi. Disse kan vi lære å gjenkjenne og redusere den negative effekten av. Negativ i denne sammenhengen betyr at det kan være hensiktsmessig å ha tilgang til mest mulig av dine ressurser også i en helt ekstrem situasjon. Vi har en tendens til å svært raskt miste tilgangen til top down delen i hjernen.
vår, prefrontal cortex (PFC), den kan beskrives som den langsiktige, vurderende og analyse-
renende delen av hjernen og at den overtas av det som er bottom up funksjonen, vaktbikkja
som alltid er på, amygdala (AMY).

Våre naturlige reaksjoner er nedarvede og innlærte handlinger som ofte skjer på et dypere
bevissthetssnivå. Vi er alle forskjellige, ikke fordi vi reagerer spesielt forskjellig rent instinktivt
(Braastad, 2010). Hvordan vi tolker de signalene vi blir bevisst tyder på at vi kan beholde og
styre vår egen atferd i stor grad med PFC. Nå er det slik at vi ikke er fightere eller flightere,
men den naturlige prosessen biologisk sett er flight, freeze, (faint), fight. Det er også slik at
det å gå mot eller søke fare belønnes av kroppen og hjernen. Det er ikke alle som syns det å
gå mot fare (fight) nødvendigvis er noe smart, men de av oss som gjør det blir «nudget» til å
gjøre mer av det ifølge Andrew Huberman (2019) som er professor i nevrovitenskap ved
Stanford universitet i California. Ganske fascinerende saker og i årene som kommer er det
vanskelig å sette grenser eller spå hvilket presisjonsnivå vi kan beskrive vår egen atferd
med.

Forenklet stress respons modell (Ytterbøl, 2016)

En annen svært viktig faktor er at vi mennesker er dynamiske og tilpasningsdyktige samtidig
som vi liker å forholde oss til vår forhåpningsfulle konstruksjon av virkeligheten. Vi opplever
vi ikke hendelser i isolasjon eller vakuum. Vi er ikke bare her og nå, men vår fortid, hvordan
vi har det i nåtid og hvordan vi ser for oss fremtiden påvirker vår tilstand gjennom det hormo-
nelle systemet i kroppen. Jeg kommer ikke til å gå i detalj i dette heftet om min tolkning av
stressresponsen, fordi den blir enormt lang. Det viktigste du trenger å vite er det som jeg har
beskrevet til nå, samtidig som du husker at det autonome nervesystemet vårt består av to
systemer det sympatiske (gassen) og det parasympatiske (bremsen) Disse to systemene er
virksomme hele tiden og for eksempel når du puster inn aktiveres den sympatiske responsen
og når du puster ut den parasympatiske.

Disse kan vi lære oss i noen grad og bevisst påvirke til vår fordel.

Tidligere trodde forskere at kroppen og hjernen søkte homeostase, eller likevekt, men nyere
forskning peker på at vi tilpasser oss i større grad til miljø samt påvirkning av både indre og ytre
stress og flytter det såkalte «set point» eller baseline for stress i forhold til det miljøet vi befin-
nner oss i. Dette kalles den allostatiske modellen og er med på å danne grunnlaget for det te-
oretiske delen av min PhD. Alt henger sammen og dette er en av forutsetningene for militær
mental trening.

Det har stor betydning for hvordan stress påvirker oss, både på kort og lang sikt og ikke
minst det helsemessige aspektet ved opplevd stress sover lang tid.

Det er viktig med en helt grunnleggende forståelse av kroppen og hjernen for og kunne trene
den på en god måte. Plansjene er med for å vise sammenhenger. Det er verken forventet el-
ler noen krav knyttet til at du må huske eller kunne dette, det er for å ha noe å bla i hvis det
har vært snakket om i de praktiske leksjonene og min erfaring da er at det er greit å ha
noe å lese på slik at du kan nå det kunnskapsnivået du ønsker selv.
Bilder viser en oversikt over den tredelte hjernen, og jeg har lagt inn AMY og PFC slik at du kan ha et bilde av hvordan det henger sammen. Hensikten er å bidra til en dypere forståelse for å kunne styre egen prestasjon bedre.

Det du putter inn i trening, skal du klare å gjøre (skill retention) i en skarp aksjon og integrere disse erfaringene etterpå. Akkurat den samme modellen benytter vi under trening, der hele hensikten er å ha tilgang på dine ressurser (motoriske og kognitive komponenter) når du trenger det som mest. En annen viktig faktor å ha med seg er at motorikk og emosjoner også
tilhører en prestasjon, og i et yrke der motorikk er en ekstremt stor del av en prestasjon undres jeg ofte over hvor lite kunnskap og forståelse det er rundt motorisk ferdighetslæring. Fra stress modeller skal vi over å se på en modell som søker å forklare de atferdsmessige og psykofysiologiske (hjernen og kroppen sammen) sammenhengene i en atletisk prestasjon, (Bertollo et al., 2016).

![Diagram of multi action plan model (MAP)](image)


Modellen beskriver 4 typer prestasjonskategorier:

**Type 1/ Optimal-Automatisk**: For eksempel bill drill, enkel stimulus respons trening basert på drill, som er motoriske og kognitive ferdigheter satt sammen slik at prosessen oppleves automatisk/ubevisst.

Kjennetegn: En *behagelig emosjonell* tilstand (P+), opplevd kontroll, høyt energi nivå i både den mentale og fysiske dimensjonen, høy selvtillit, uanstrengte lette bevegelser med flyt som er automatiserte og konsistente med høy grad av repeterbarhet.

Denne ideale tilstanden kan fort bli forstyrret, men gode utøvere kan fortsatt prestere ekstremt bra gjennom å utøve top-down kontroll med PFC.

**Type 2/ Optimal – Kontrollert**: For eksempel en stage satt opp som en test der det er mange flere elementer og du kanskje tenker på det å bli sist.

Kjennetegn: Funksjonelle optimale, men *ubehagelige emosjoner* (N+) og handlingsstrategier som er direkte knyttet til utførelsen. Her handler det om å velge fokus (1-2 chunks) holde kontroll eller ta kontroll og ikke ha for mange tanker i hodet, slik at den ressurskrevende reinvesteringen i utførelse ikke blir for stor slik at du detter ned på suboptimale prestasjoner.
Type 3/Suboptimal -kontrollert: Dysfunksjonelle emosjoner (N-) kombinert med overdrevent fokus på bevegelses utførelse, som fører til et overslag gjennom for mye kontroll og dermed redusert bevegelseskvalitet. Kalles choking, for eksempel en putt i golf, straffespark i fotball.

Type 4/Suboptimal -Automatisk: Dette kan oppstå når den individuelle psykofysiologiske tilstand er fin og følselene er bra (P-). Utøveren opplever lav energi og kanskje fjerner seg litt fra oppgaven og fører til dårlig koordinert utførelse. En underaktivertion som svar på oveaktivering og bortkastet energibruk før selve prestasjonen. Et eksempel fra militær kontekst er opptreden i høy risiko områder og evnen til å justere mentalberedskap og ikke bare være «på» hele tiden.

Denne modellen integrerer psykologiske (hjernen), fysiologiske (motoriske), atferdsmessige (prestasjonstilstander) og kinematikk (beskriver bevegelse uten krefter). Videre er den en *intervensjonsmodell*, det betyr at i treningen vi gjør så ønsker jeg å bidra til en økt presisjon i hvordan dere forstår en prestasjon. Det er en helhetlig modell og vi skal bruke denne for å bidra til *technique housekeeping*, og i denne ryddingen er det ofte nok å børste litt støv, vi snakker ikke om omfattende renovering.

Modellen er forsket svært mye på og er i dag den mest presise modellen å jobbe fra når vi skal knytte det til mental trening. Modellen er også kompatibel med bruk av nevro og biofeedback utstyr, der kan vi både måle hvilken prestasjonstilstand du er i og hvordan du skal optimalisere den. Denne teknologien og applikasjonene blir stadig mer presise og tilgjengelige og vil være en helt naturlig del av trening også utenfor toppidrett etter hvert. Det er viktig å huske på at det er ingen erstatning for mental trening, men en forsterkning og presisering.
Militær Mental Trening (MMT)?
Nå litt mer om min tilnærming til mental trening.

MMT er et samlebegrep jeg bruker for å beskrive trening av mentale teknikker i en militær kontekst. Det blir da naturlig å spørre om hva en mental ferdighet er:

Olympiatopps modell:

Olympiatoppen har i lang tid fokuset på mental trening for sine utøvere, og utviklingen av psykologiske konsepter har skutt fart de ti årene jeg har studert dette og jeg vei si at fotball er den idretten hvor utviklingen går raskest og har kommet lengst. Tilgjengeligheten og utviklingen av moderne teknologi fører til en utrolig forsterkning av kognitiv mental trening. Vi kan nå måle og observere på en helt annen måte enn tidligere.

Et av de store paradoksene i den militære profesjonen er at du ikke vet når du får bruk for det du trener på. En klok mann sammenliknet det med å trene på å svømme, uten å ha tilgang til vann. Så du bare holder på å tørrtrene, så plutselig, blir du kastet ut i det åpne hav og du må svømme for første gang. Heldigvis har vi relativt gode treningsprinsipper som vi vet funker når du trener det. MMT er med på å gjøre overgangen mer bevisst og kan bidra til å håndtere dette bedre etterpå. For en soldat, operatør, offiser eller sersjant så er arenaen prestasjonen skal skje på svært annerledes enn for eksempel en idrettsutøver.

Dette perspektivet er svært viktig når vi skal lage et utdanningskonsept for MMT. I kort betyr dette at vi må ta hensyn til nettopp den militære arena. Det betyr at vi må ta hensyn til vår egen fysiologi, med andre ord, når vi fester oss truet responder kroppen og hjernen automatisk. Disse mekanismene er helt naturlige og er en del av oss vi ikke kan styre direkte med vilje. Mye av MMT handler om en programmering av hva du skal gjøre i en gitt situasjon og en vaksinering både mot lammende frykt eller overdreven aggresjon og mot MAP modellen.

For å forstå hvordan vi skal trene, er det viktig med kunnskap om hvordan vi er skrudd sammen. Som mennesker er vi et produkt av evolusjon. Det innebærer at mange av måtene vi
ubevisst (instinktivt) reagerer på er et produkt av en evolusjon gjennom tusenvis av år. Mange av disse reaksjonene som alle spinner fra fight/flight er naturlige, allikevel er det ikke alltid det er fordelaktig i en militær setting.

I en stridssituasjon er vi helt avhengig av å ha tilgang til vårt kognitive register, PFC for å kunne ta gode beslutninger. Er vi låst i en tilstand så er det vanskeligere å ta de gode avgjørelserne. Mange mener at stress og følelser ikke er likekommende, mens den kjente psykologen Richard Lazarus (1922-2002) argumenterer for at stress og følelser er to sider av samme sak og dette danner en grunnstein for hvordan forfatteren velger å tilnærme seg MMT. Velger du å føle stress, så blir du stresset (altså disse faktorene som påvirker prestasjonen sin) Velger du å fokuse på hva du kan påvirke i situasjonen så vil ofte det ikke være plass til å kjenne etter at du er stresssé, og dermed så er det enklere å prestere bedre. Mange tror stress bare er negativt, men hvis det ikke hadde betydd noe for deg å prestere bra, hadde du jo ikke lagt den innsatsen heller, så en grunnpenning er bra!

Verktøy for mental trening

For å oppnå målet vårt om å ha tilgang til ferdighetene våre i en ekstrem situasjon er det viktig å integrere MMT som en naturlig del av utdanningen. MMT er ikke noe som er ment å stå alene. Det er ment som verktøy for å forsterke den læringen som skjer, og bidra til økt ferdighets- og ressurstilgang, samt øke valgmulighetene i en livstruende situasjon. Det er heller ikke en unik måte å gjøre dette på som vil passe for alle. Instruktøren må individualisere hvilke mentale verktøy som brukes for de enkelte elevene.

Da har leseren fått en forståelse av hva som ligger i MMT. Det som kommer nå, er en konkretisering av faktorer og ferdigheter som legger grunnlaget for en god prestasjon. Husk på at det finnes ingen absolutte sannheter og det aller viktigste er å jobbe frem din egen version, ditt eget program.

Et av målene med denne treningen er å hjelpe deg av å finne ut hva dine optimale prestasjoner og stresshåndtering bygger på og hvordan du i størst mulig grad kan påvirke din egen tilstand og dermed prestasjon. Under ser du hvilke teknikker jeg forsker primært på i prosjektet.

**Mind: set**


Det er ikke slik at vi automatisk blir bedre i en livstruende situasjon, det er mange faktorer som spiller inn, og det er viktig å huske på at det er din treningsstandard som i stor grad påvirker utførelsen din. Denne tankegangen krever mye av deg. Den krever at du er i stand til å sette fokus på den treningen du skal gjøre, hva du ønsker å få ut av treningen, samt en refleksjon etterpå om du nådde de resultatene du ønsket. Det krever at du baserer din prestasjonssutvikling på en plan og justerer slik at du oppnår de resultatene du ønsker. Jeg opplever at idretten har satt dette i et system som vi har svært mye å lære av, selv om arenaene vi skal presterere på er forskjellige.

Jeg skal nå presentere noen verktøy som kan være nyttige i de forskjellige fasene av både trening og oppdragsløsning, og hvordan dette er opphengt i – før, - under og - etter fasen. For at dette skal være konkret er det linket opp mot skytetrening primært, og er ment som innspill og inspirasjon.
Hva ønsker du å oppnå med skytingen i dag? Hvilke momenter har du med deg fra forrige økt og hvordan henger øktplanen sammen med ditt langsiktige mål? Hva er de viktigste faktorene du noterte i skyteboken din fra forrige runde? Hvordan er økten lagt opp progresjonsmessig og hvordan ønsker du å måle resultatene dine? Hvordan integrerer du mental trening i økten og hva er den viktigste faktoren for deg å mentalt fokus på under dagens økt?

Allerede her vil du oppleve at alle faktorer ved ditt mindset er integrert i din prestasjon. Som mennesker liker vi godt å gjøre det vi allerede er gode i og er kanskje i mindre grad interessert i å eksponere oss for våre svake områder, og min erfaring er at dette ofte gjelder i prestasjonsmiljøer, fordi en prestasjon ofte er koblet opp mot egen verdi og identitet. Det finnes ikke noe «galt» i det men det kan være viktig å være klar over. Det å trene på det vi er dårlige på, uansett hva det er krever en mod på flere nivåer. Konkurranse og tester er viktige elementer. Vær bevisst på hva du putter inn mentalt på hvilket tidspunkt for det danner grunnlaget for prestasjonen din.

Trener du på det du er trygg på vil progresjon utebli og du oppnår kun en stagnasjon, både kognitivt og motorisk. Skyting er i utgangspunktet enkelt. Du må stabilisere siktemiddelet godt nok i forhold til målets størrelse, avstand og skytestilling, dra i avtrekkeren og repetere til målet er bekjempet. En dyktig skytter forenkler prosessen for seg selv, en dyktig instruktør bidrar til at det enkle gjennomføres riktig.

**Måldefineringsprosess**


En nyttig måte å sette fokus på er å benytte seg av huskeordet SMARRT.

**S- spesifikt:** Målet ditt bør beskrives så spesifikt som mulig i JEG form.

**M-målbart:** Målbartighet hjelper deg til å justere treningen.

**A-Attraktivt:** Du bør ha lyst til å få det til, kjenne at det trigger deg.

**R-realistisk:** Er det mulig? På hvor lang tid, med hvilke ressurser?

**R-relevant:** Er det relevant for deg?

**T-tidsbestemt:** Innen når har jeg oppnådd det?

For eksempel kan et økt mål være:

Jeg (Spesifikt, personlig jeg form) vil i løpet av dagens pistoløkt (tidsbestemt) ha skutt Bill drill (attraktivt, gøy og motiverende) (Relevant) repeterbart, mer enn 3 ganger (realisme, ikke flaks) på 2 sekunder fra høy ferdigstilling (Målbart).
Det neste steget da er å se på hvordan du skal nå det målet, og bryte det ned i arbeidsoppgaver og spesielle fokusområder for deg selv. Hvilke faktorer må være på plass for at jeg når målet? Er det noen ressurser å støtte seg på for å få det til? Hvordan vet jeg at jeg er på riktig vei i økten? Er det noen andre ting jeg bør være klar over?

Spør deg selv: Hva er den beste måten å nå dette målet på?


Hoveddel: Her skal det være kvalitet og presisjon i det du gjør og skyting er både nivå 1 (bill drill) og 2 (el pres) prestasjon, avhengig av hvilken type skyting som trenes. Det å lære seg hvilke kvaliteter du innehar i din prestasjon er helt avgjørende for de resultatene du får. I hvøda el det forskjellig hva den enkelte liker å ha fokus på, noen er bevisste pust og fysio (kroppens bevegelser) Det er for eksempel veldig lett og holde pusten i en presentasjonsfase under stress, med påfølgende negative resultatater for prestasjonen over noen minutter.

Som du har lest nå så har jeg integrert alle de sentrale faktorene i mentaltrening på en økt, Du jobber deg inn i en prestasjons tilstand og ut av den på en systematisk måte. Det innebærer at den er lettere å finne frem til for systemet ditt under ekstremt stress.

En måldefineringsprosess er svært viktig når det kommer til det å analytisk tilnærme seg det du ønsker og oppnå, lage en handlingsplan for å komme dit som kan justeres underveis. Nå skal vi se på hver enkelt teknikk mer isolert, men først skal du få lese litt om motoriske ferdigheter.

Noen ord om motorikk

Motorisk læring er beskrevet som en langvarig endring i en persons kapasitet til å gjennomføre en motorisk ferdighet. Motorisk ferdighet betyr alle funksjoner og prosesser som er med på å styre våre kroppslige bevegelser. Finmotorikk er enkelt forklart bevegelse av hender og fingre, for eksempel et avtrekk. Grovmotorikk er større bevegelser, for eksempel å bevege seg inn i stilling. For å kunne gjennomføre effektiv innlæring av motorikk er det hensiktsmessig med en viss forståelse av hvordan hjernen fungerer, slik at vi kan bruke dette som grunnlag for treningsmetodikken. En lukket motorisk ferdighet er typisk en ferdighet som du presterer alene i og bestemmer starten på og hva du skal gjøre, for eksempel et stup. En åpen motorisk ferdighet kjennetegnes ved at miljøet forandrer seg hele tiden og du må forholde deg til mange faktorer, typisk lagspill og for eksempel en pasning i fotball. I en militær kontekst vil vi havne i begge kategorier.


Den ubevisste delen virker ikke på teori eller logikk. Den lærer av repetisjon. Den lærer like mye av feil repetisjon som riktig repetisjon, det vil si at du må trene korrekt for å få korrekt resultat. 1 feil repetisjon krever 4-5 korrekte repetisjoner for å rettes opp. Den ubevisste delen av hukommelsen har mye lengre «varighet» enn den bevisste.

Når den ubevisste delen av hjernen tas i bruk er du bare i stand til å gjøre det du har trent på, når det kommer til kompleksitet og hastighet. Det vil si at hvis du aldri har drevet skytetrening i høy hastighet kan du ikke forvente å skyte hurtig og presist idet du står i en livstruende situasjon.

Vi er opptatt av at det du trener på, bør du ha tilgang til under stress. Det betyr at jo bedre motoriske ferdigheter du har, jo lettere vil tilgangen til disse ferdighetene være under stress. På denne måten henger motoriske ferdigheter og militær mental trening sammen. Ofte blir denne treningen misforstått, og det er lett å tenke at jo mer jeg trener under stress jo enklere

En faktor som jeg velger å ta med er om hjernens plastisitet og jeg legger ved en figur som beskriver det på en svært god måte.

Visualisering (motor imagery & mental rehearsal)

Som en del av oppvarmingen, før økta, eller før en tabell, stage etc så er en kombinasjon av tørrdrill og visualisering svært effektivt. Olympiatoppen definerer den måten å trene på som teknisk/taktisk (motor imagery): Dette er den visualiseringen som er en imitasjon av når du gjør det «live». Gjerne på en lik arena, med samme utstyr, hvor du er i situasjonen og bruker


**Pust**


den viktigste faktoren for spenningsregulering. En annen form for pustering er såkalt TUMMO pust, kommersialisert gjennom Wim Hof.

A man climbed Mount Everest shirtless, wearing only a pair of shorts. Though this may seem unbelievable, it's true. This feat was accomplished by a Dutch man named Wim Hof, otherwise known as "The Iceman." Hof's nickname comes from his seemingly superhuman ability to withstand the extreme cold. He currently holds 26 world records; including the world's longest ice bath, which he endured for nearly two hours. Though he seems superhuman, Hof claims that everyone can learn to do what he does.

Selvsnakk og affirmasjon.

Affirmasjoner er en del av selvsnakk, og selvsnakk er mer en programmering av noe enn å bekrefte, eller styre tanker i en retning slik affirmasjoner er (Jeppesen & Pensgaard, 2005)

Selv om selvsnakk ligger under trening, er det også et svært viktig verktøy for å styre tankene dine under forberedelser og for å programmere triggerord. Hjernen vår har en tendens til å skifte fokus, derfor er påvirkning av selvsnakk en svært effektiv metode som bidrar til å styre fokus og minne seg selv på arbeidsoppgaver før og under prestasjoner.

Det er viktig å definere arbeidsoppgaver, hva du ønsker å ha fokus på før du skal prestere og bruke positive affirmasjoner. (for eksempel" fokus på forsikte" vil med triggerord tankegangen bli kun "forsikte". Positive affirmasjoner: Dette klarer jeg, lett, jeg har kontroll)

Negativt selvsnakk fører ofte til en negativ spiral med negative affirmasjoner og det påvirker oss emosjonelt.

Failure is feedback

Det å feile, underprestere eller rett og slett gå på snørra er nyttig feedback, og beskrives som failure is feedback. Hvis noe som ikke virker - gjør noe annet isteden. Ofte kan slike tilstander være krevende å bryte ut av, spesielt når du står mitt opp i det. Det å trene sin fleksibilitet er en viktig øvelse og som Darwin sa, its not the strongest who survives, its the most fleksible, (hvertfall nesten noe sånt). I denne sammenhengen er evnen til å skape et brudd viktig.

**Fysiologi/Kroppsspråk**


**Meditasjon:**

Meditasjon er for meg et samlebegrep på forskjellige teknikker som brukes for å oppnå tilstander av ro, passiv observasjon, aktiv observasjon og en slags uanstrengt tilstedeværelse.


**Integrering og refleksjon**

Veldig enkelt sagt; du får mer av det du har fokus på. I denne sammenhengen fokuserer vi på trening. Det å ha fokus på det negative i prestasjonen hjelper ofte svært lite, annet enn å minne deg selv på hva som ikke gikk så bra. Holder du på lenge nok er det nok av ting som går dårlig, og du kommer til å presterere ujevnt. Målet bør uansett være å forsterke det som gikk bra. Det er en felle å snakke om forbedringspotensial. Det er bare et forsøk på å sette et fint ord på noe som ikke gikk så bra. Isteden kan du huske what went well – even better if
(WWW - EBI). Dette er feedback både til deg selv og bør benyttes i instruksjonssammenheng til å beholde fokus og gjøre faktorer enda bedre. Dette er erfaringsrefleksjonene du bør skrive ned å ta med deg til neste runde. Det er ofte litt mer motiverende å plukke opp skyteboka og lese om hva du kan påvirke istedenfor det som ikke gikk så bra. For å luke ut feil må du ha fokus på det du gjør bra, og gjøre mer av det. Til slutt vil feil forsvinne av seg selv, det gjør de ikke ved tvang, du kan velge å være litt lur i forhold til deg selv og de du gir tilbakemeldinger til.

**Oppsummering**


Referanser i leseheftet


https://www.nicabm.com