

Team resilience training in virtual and live environments

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NORWEGIAN ARMED FORCES





The Royal Norwegian Naval Academy - Training philosophy



Resilient teams are paramount for military operations





Team training exercises

- Exercise Aden (virtual)
 - anti-piracy operations in the Gulf of Aden
 - moderate demand on team resilient behaviour
- Exercise Carey (virtual)
 - historical events from World War II in the North Sea
 - high demand on team resilient behaviour
- Exercise Telemakos (field)
 - a 10-day combat survival course
 - extremely high demand on team resilient behaviour

Aden upper left, Carey upper right, Telemakos below



Team Performance Assessment tool

- Teamwork and Taskwork parameters
- Extra focus on team resilience parameters, such as
 - Adaptability
 - Agility
 - Creative action
 - Speed
 - Thouroughness

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RNoNA Team Performance Assessment
                                                        Team:
                                                                                 Rater:
1. Team Orientation:
    The team showed a high degree of involvement (team members monitored and paid attention to other team members, not many
    "free riders" in the teamwork process)
      Unacceptable
                       Below expectations
                                                 Meets expectations
                                                                         Above expectations
                                                                                                    Outstanding
2. Backup Behavior:
    The team showed a high degree of backup behavior (team members helped/assisted without being asked, push of information)
                                                Meets expectations
      Unacceptable
                        Below expectations
                                                                         Above expectations
                                                                                                    Outstanding
                                        3
3. Mutual Trust:
    The team trusted one another (information was freely shared, no reprisals for sharing, confident in others ability to perform tasks)
                                                Meets expectations
      Unacceptable
                        Below expectations
                                                                         Above expectations
                                                                                                    Outstanding
4. Mutual Performance Monitoring:
    The team adjusted and reinforced each other (feedback when right or wrong was offered and accepted by team members)
      Unacceptable Below expectations
                                               Meets expectations
                                                                        Above expectations
                                                                                                    Outstanding
                                         3
   Closed-loop Communication: The team exchanged information and coordinated actions through feedback and response
                                                 Meets expectations
      Unacceptable
                        Below expectations
                                                                         Above expectations
                                                                                                    Outstanding
6. Team Leadership: The leader was effective at solving team problems (roles and responsibilities were distributed in the team)
                        Below expectations
                                                                         Above expectations
      Unacceptable
                                                 Meets expectations
                                                                                                    Outstanding
7. Shared Mental Models: The team showed the ability to create a common outlook (all team members were kept updated on the
    objectives, situation and priorities, both for teamwork and taskwork objectives, "what if"-processes)
      Unacceptable Below expectations
                                                Meets expectations
                                                                         Above expectations
                                                                                                    Outstanding
8. Adaptability: The team showed the ability to recognize mismatches and adjust strategies to fit the situation (coordination to meet
    shifting internal and external needs)
      Unacceptable Below expectations
                                                 Meets expectations
                                                                         Above expectations
                                                                                                    Outstanding
9. Agility: The team showed the ability to rapidly change their orientation in response to what is happening (the team actively
    interacted with the environment, not isolating themselves from it, e.g. alert and ready to move)
      Unacceptable Below expectations
                                               Meets expectations
                                                                         Above expectations
                                                                                                    Outstanding
 10. Creative Action: The team was proactive in their actions to generate unexpected changes (taking action to create and exploit an
    advantage, e.g. shift friction from oneself to the opponent, "command both sides")
      Unacceptable Below expectations
                                              Meets expectations
                                                                         Above expectations
                                                                                                    Outstanding
11. Speed: The team showed correct and timely coordination of planning and actions (short time, appropriate method and strategy,
    valuable time was not wasted, acting faster than the opponent)
      Unacceptable
                        Below expectations
                                                 Meets expectations
                                                                         Above expectations
                                                                                                    Outstanding
12. Thoroughness: The team maintained commitment and determination to challenge the situation (bounced back from pressure)
      Unacceptable
                        Below expectations
                                                 Meets expectations
                                                                         Above expectations
                                                                                                    Outstanding
13. Success: The team successfully accomplished the task/mission (when compared to training/mission objectives for the exercise)
      Unacceptable
                        Below expectations
                                                Meets expectations
                                                                         Above expectations
                                                                                                    Outstanding
Comments (fill in additional information on team behavior, special assignments that can explain scores, overheard quotes, etc.
that can further describe your assessment):
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Exercise demands and team resilience predictability

Exercise task demands

Stressors	Aden	Carey	Telemakos
Fear		Х	Х
Uncertainty		Х	Х
Vulnerability		Х	Х
Information ambiguity	Х	Х	Х
Danger	Х	Х	Х
High cognitive workload	Х	Х	Х
Time Pressure	Х	Х	Х
Powerlessness (political)	Х		
Boredom	Х		
Fatigue (mental & physical)			Х
Weather effects			Х

Aden and Carey vs. Telemakos

n=8 teams	ρ	Ρ(ρ)
Aden vs. TM		
Team Performance	.29	.270
Teamwork	.33	.235
Taskwork	.05	>.50

n=8 teams	ρ	Ρ(ρ)
Carey vs. TM		
Team Performance	.66	.045
Teamwork	.67	.043
Taskwork	.73	.028



Insights and implications What did we learn from comparing Carey, Aden and Telemakos?

Choice of assessment parameters

- Teamwork metrics should be accompanied by Taskwork metrics to fully assess team performance.
- Team Performance = Teamwork + Taskwork

Scenario design matters

- We can predict, but to predict well – we must design well
- The virtual environment must emulate the stressors and behaviors found in the live environment

We discovered methods to train and assess resilience factors within teams – but how should we train and assess resilience in teams of teams?



Exercise MAROPS ver 1&2

Training Objectives

Show 3rd grade cadets:

- 1. Complexity of Maritime Operations
- 2. Interdependence of Branches

Execution

8 real units branch related tasks b) 8 real units branchless

Introduced Virtual Environments c) 4 Real + 4 Virtual units branchless Including Live AIS-based objects







Exercise MAROPS ver 3

Achievements

- Own units Real and Virtual
- Traffic picked from Live AIS
- Interaction between Virtual Units
- Virtual Units act on Live decisions
- Live Units act on Virtual Decisions
- Live COSS Centre included

Extended use of an existing Technical Skills training platform



JOST - Training Interdependence





JOST - Interdependence Training (2)

Branch interdependence for cadets

- Best outcome if run real-time
- Decisions and Actions have realistic consequenses
- Conducted only in virtual environments (no ships) so far
- Extremely complex and time consuming planning
- Brings a «new» area of training to the table... «within and between units»









Time-Decision trap - and the gap between decision makers and operators





The Three Pillars of Training





