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## Managing risks arising from mismatches between physical conditioning & tactical task requirements

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# ***Managing risks arising from mismatches between physical conditioning & tactical task requirements***



Source :Defence Media

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*Tactical Research Unit*  
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# Acknowledgments

*Dr Rob Orr, Tactical Research Unit, Bond University*

*The many Physical Training Instructors & tactical operators who have kept me grounded over the years & taught me much*



# Overview

## ***Managing risks arising from mismatches between physical conditioning & tactical task requirements:***

- *The Quest for the perfect predictive test(s)*
- *Why the Quest is doomed*
- *Alternative? The Public Health Approach?*
- *A better way: holistic risk management*
- *Identify context, tactical tasks & task requirements*
- *Identify required physical conditioning elements & levels*
- *Tactical fitness vs athletic/ sports fitness vs health fitness*
- *Identify mismatches*
- *Identify & prioritise risks arising from mismatches*
- *Consider risk treatment strategies & associated risks*
- *Fairness, the greater good, the personnel pool & more*
- *Risk management approaches*
- *Concluding remarks*

# The Quest for the perfect predictive test(s)

## What we've all observed:

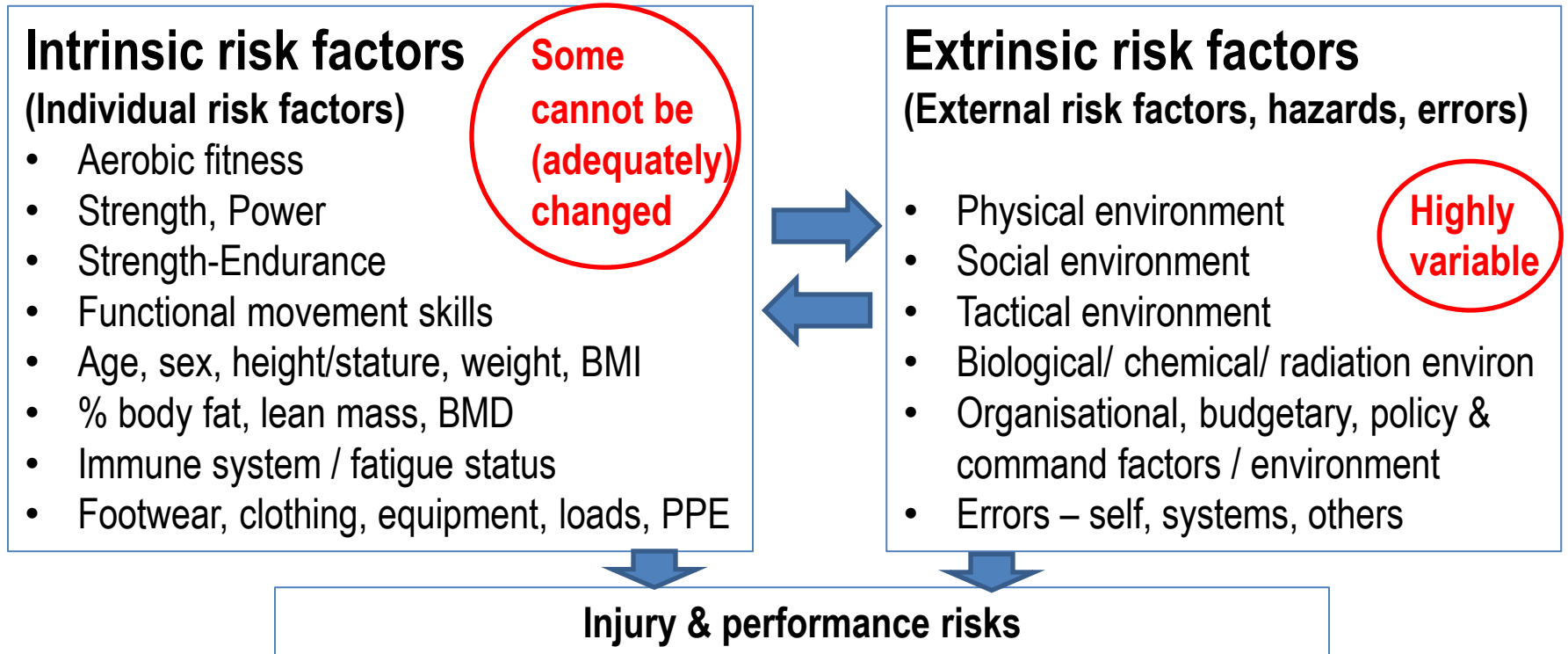
1. some tactical operators get injured, some do not
2. some perform successfully, some do not
3. those in each category seem often to have common traits
4. we think we can predict who is who...
5. ...but our predictions are sometimes surprisingly incorrect & not always helpful!

**The perfect predictive test or test battery** would accurately predict *who will do well & who will not*, and indicate how to optimise performance & eliminate injuries

## The *Quest* for the perfect test or test battery:

1. began decades ago with studies of individual risk factors
2. has morphed into trying to find predictive TEST BATTERIES
3. will never yield the perfect predictive test - *for tactical operators especially*

# Why the Quest is doomed



*\*\*Individual fitness & functional tests/ batteries focus on intrinsic risk factors, ignoring extrinsic factors*

# Why the Quest is doomed (cont'd)

## Intrinsic risk factors (Individual risk factors)

- Aerobic fitness
- Strength, Power
- Strength-Endurance
- Functional movement skills
- Age, sex, Height/ stature, weight, BMI
- % body fat, lean mass, BMD
- Immune system / fatigue status
- Footwear, clothing, equipment, loads, PPE

Some  
cannot be  
(adequately)  
changed

## Other issues:

- Individual factors explain risk only a little – many contributors!  
BUT small differences in risk do accumulate over repeated events...*so do consider these*

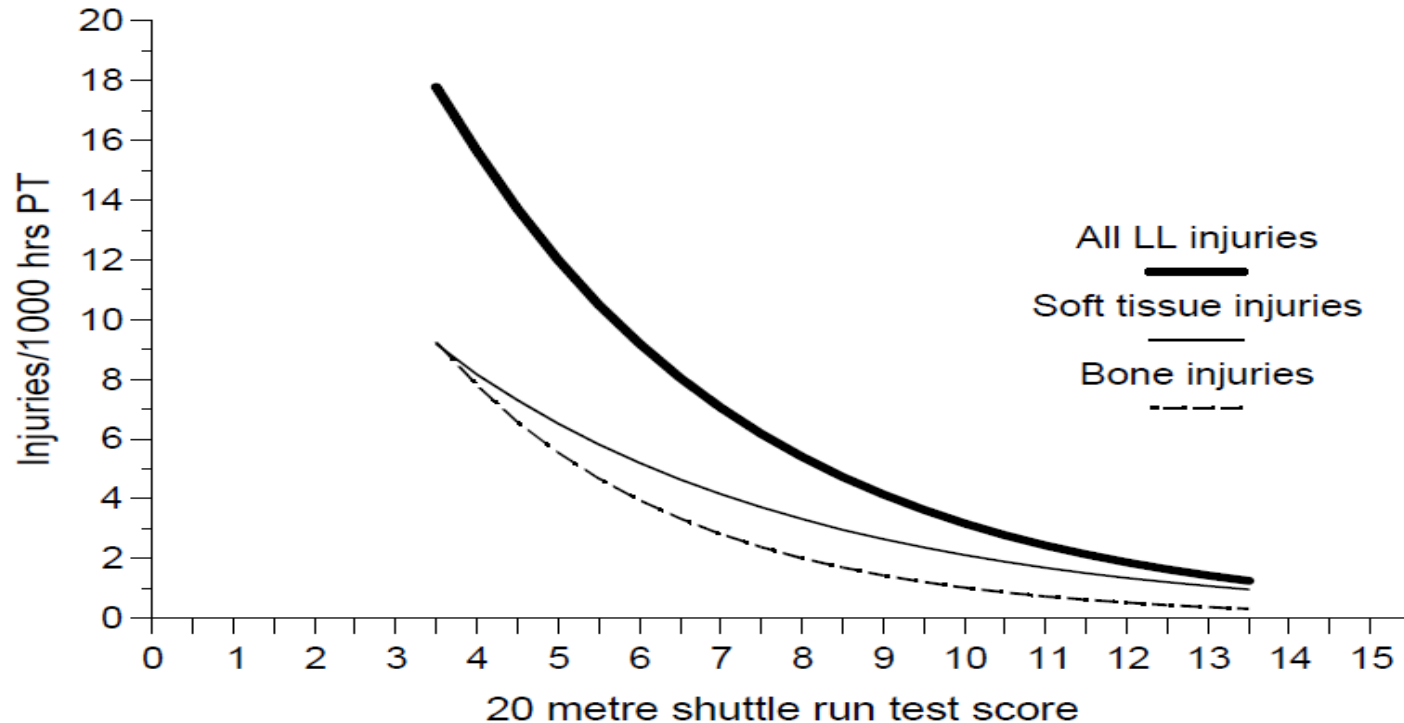
## Other issues (cont'd):

- A test or test battery can be 'highly accurate' in predicting injury/ non-injury outcomes even if it doesn't differentiate at all
- Beware of studies reporting 'good' predictors where the numbers of statistical analyses are high – often the findings will be by chance
- Beware of predictors from single studies - the most trustworthy predictors are supported by multiple studies
- *Predictors* may not be *causes* & so changing them (eg by training) may not alter risks
- Beware of arbitrary 'cut-points' – consider the full risk continuum



# The full risk continuum

- Note: actual levels of risk at each score will vary with context



(Pope, 2002, pp. 82;

[www.researchgate.net/publication/273119693](http://www.researchgate.net/publication/273119693) Prediction and prevention of lower limb injuries and attrition in army recruits)



# Alternative? The Public Health Approach?

## The Public Health Approach:

1. Identify & define the health problem of interest
2. Investigate & determine risk & protective factors
3. Design & evaluate preventive interventions
4. Roll out successful interventions & ensure uptake

## A sound approach in many situations, BUT:

- Public Health is about populations, not individuals
- What works on average may not work for some individuals
- What works for the population may not be optimal or fair for individuals (eg adjusting training load for the group, some selection processes)
- Need large numbers of people doing similar things, in similar contexts, in a repeated cycle, for this approach to work best **≠ the tactical operator, except in some training contexts**

# A Better Way: Holistic Risk Management

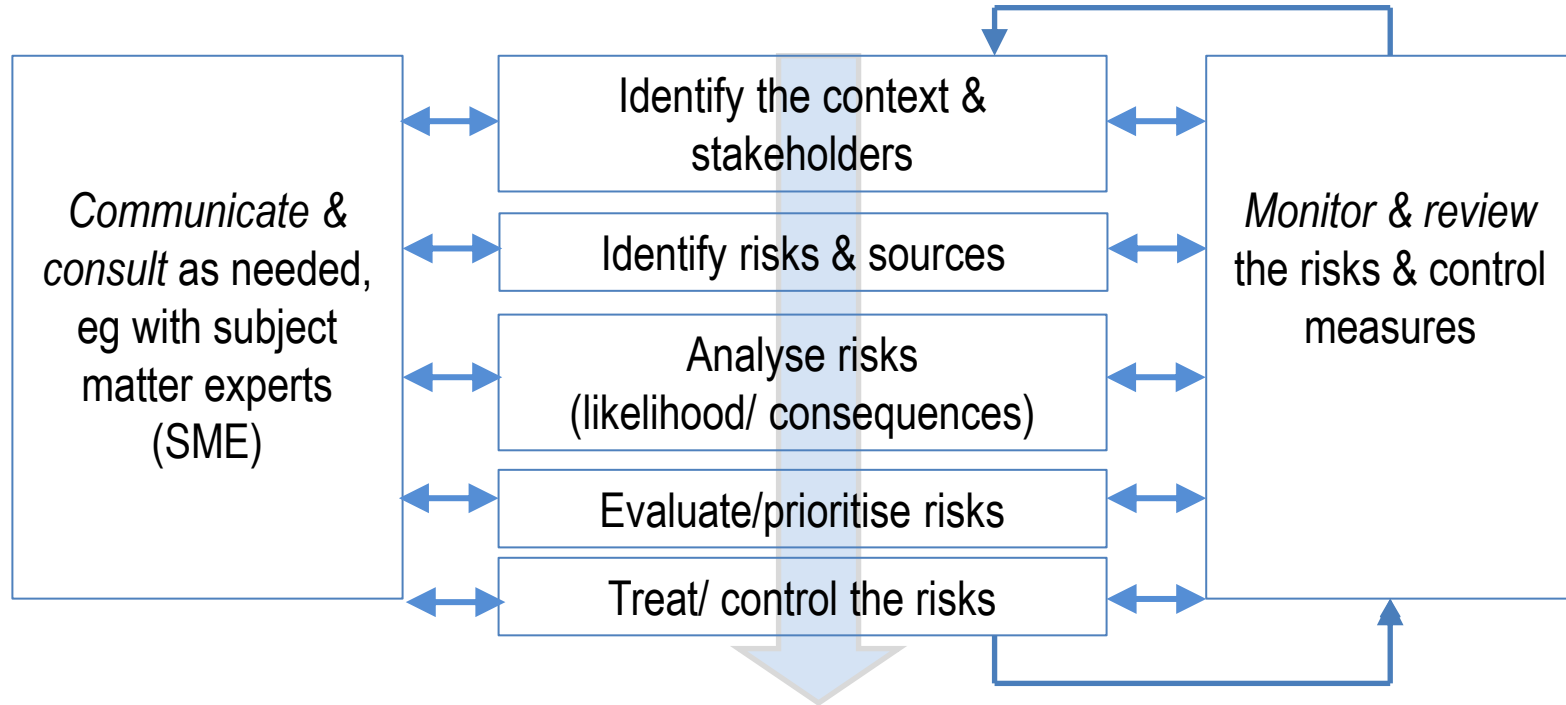
## Why Holistic?

- Injury risks are not the only risks that matter for tactical operators, commanders & strategy
- Neither are physical performance risks
- Other areas of risk: readiness, team integrity, mission success, lives, reputation, careers, budgets, resilience, diversity (lack of)
- All risks must be considered & balanced (holistic approach)

## Holistic risk management is:

- *Comprehensive* – considers the context and:
  - all key stakeholders and risk *types*
  - all key risk *factors* – extrinsic, intrinsic
- *Agile*: can adapt rapidly to changing contexts & situations
- *Responsive & pro-active*: identifies & addresses risk factors & sources rapidly, in advance, without dependence on prior data if unavailable (brainstorming) but using prior data if available

# The Risk Management Process\*



\*Adapted from ISO 31000: 2009 Risk Management - Principles & Guidelines

*Inadequate physical conditioning will be just one source of risks but may create others*

# Identify context, tactical tasks & task requirements

- **Context:** identify with SMEs the tactical population & their role(s), & the physical, organisational/ social, tactical, political environments in which the tactical roles or the specific tasks/ mission will be undertaken
- **Tactical tasks:** brainstorm with SME the specific or common and most demanding tasks that comprise the mission/ role
- **Tactical task requirements:** break down the tasks & identify the most physically demanding aspects, with SMEs



# Identify required physical conditioning elements & levels

- **Physical conditioning elements:**  
eg specific muscular strength, balance/ agility, aerobic fitness, power – based on key task requirements
- **Levels of required performance/ capacity:**  
consider 30-40% of max. capacity as rule of thumb for max *sustainable* workloads. Also, more is not always better, as training carries its own risks, & ‘brains’ & ‘brawn’ each play a role
- **Required elements & levels may be identified** informally, through brainstorming & observation by SME, or through research, including literature reviews & new studies



# Tactical fitness vs athletic/ sports fitness vs health fitness

## Tactical operators – unique occupational fitness requirements & constraints:

- Frequent/ constant load carriage – tools of trade & PPE ++
- Sustained missions/jobs, with time frames dictated by mission/job & often unpredictable & evolving
- Frequency, timing & demands of missions often unpredictable
- Physical demands may be repeated again in a new mission/job, within a short time of finishing one
- Physical training may be difficult in some deployed contexts – terrain, access to safe areas, time. Nutrition, hydration similar
- Risks to be balanced may be extreme – may be life or death of others/self vs risk of injury to self => max efforts common
- Environments harsh, extreme, hazardous, often unfamiliar

# Identify mismatches between physical conditioning & tactical task requirements

## Identifying mismatches will require:

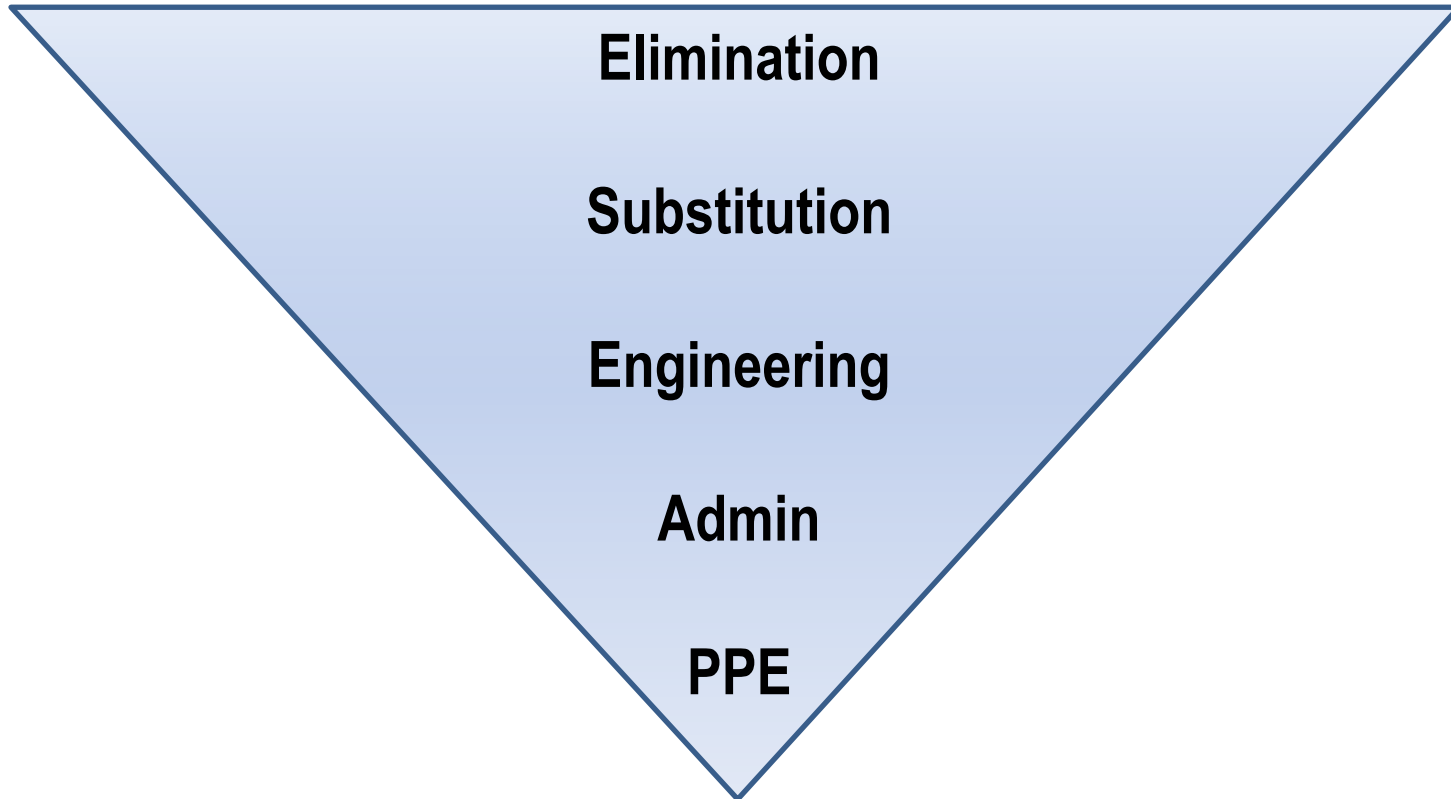
- *Physical performance assessment*, using tests that are good ways (valid, reliable, precise, fair) to assess the specific fitness attributes you have identified are important for the respective tactical role / tasks
- *Comparison* of assessed performance levels with required performance levels, determined in preceding steps
- *Consideration of potential* to further enhance physical conditioning, where mismatches are identified – at times, personnel may already be optimally trained & the risks may only be controlled if the task demands are reduced (eg tactical load carriage may exceed everyone's safe capacity)



# Identify & prioritise risks arising from mismatches

- *Note:* this is just one part of the overarching risk assessment process, in which all other key risks will also be considered
- Brainstorm with SMEs the risks to role performance, mission, general public/ civilians & tactical personnel associated with mismatches between task demands & assessed levels of physical conditioning
- Consider sources, likelihoods, consequences of risks
- Considering the risk likelihoods & consequences (a 'risk matrix' may be useful) & your team's capacity to safely address each risk, prioritise the risks to be addressed

# Risk Treatment: Hierarchy of Controls



# Consider risk treatment strategies & associated risks

**Some potential risk treatment or control options** (consider the *hierarchy of controls* – go beyond just physical training):

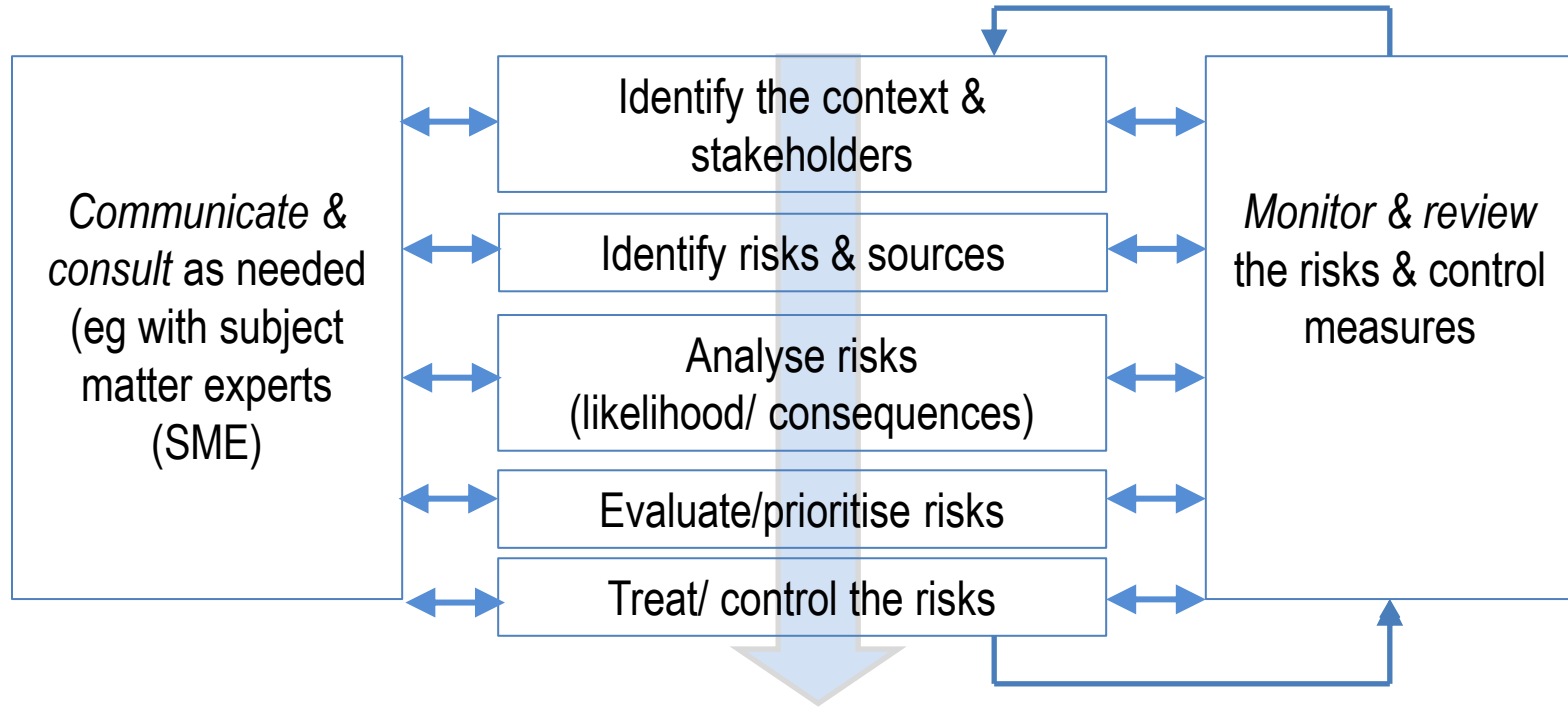
- Eliminate or modify the risk source (role, mission, task), eg cancel or re-plan or set limits around non-critical / ill-advised missions / activities/ tasks, use robotic devices/ drones
- Reduce or reconfigure loads / workloads to safe levels (eg equipment inventory/ weights, logistic support, vehicles, robotics)
- Plan mission around physical demands & capacities (eg routes, terrains, logistic support, rest periods, timings)
- Acknowledge & accept the risks without taking other action or refer to a higher authority
- Selection/ exclusion of personnel for the role/ mission or training on the basis of fitness measures
- Group conditioning for the role, mission, task
- Individual, tailored conditioning for the role, mission, task, as indicated by assessment
- ...& more - be guided by the *hierarchy of controls*

# Fairness, the greater good, the personnel pool & more

**Personnel selection by physical performance testing** is a risk mitigation strategy that must be carefully considered:

- How reliable, precise & valid is the test or test battery? – is it fair to individuals & trustworthy & useful for the organisation (for the greater good)? Job-related? Legally defensible?
- What cut-off score will be used, & how is this justified?
- What proportion of tested personnel will the cut-off score exclude? How big is the pool of personnel from which personnel will be selected? Will enough personnel be selected to fill critical roles in the tactical team(s)?
- Will the selection process exclude personnel who have attributes other than physical fitness which are critical for mission success? (eg language/cultural competence, specialist/ technical expertise)

# Risk management approaches



\*Adapted from ISO 31000: 2009 Risk Management - Principles & Guidelines

*Once risk controls are implemented, monitoring & review & risk management continue*

# Concluding remarks

- Effectively managing risks arising from mismatches between physical conditioning & tactical task requirements requires a holistic risk management approach & consultation with SME.
- Mission/ task/ equipment/ load modification may in some cases be more important & achievable than increasing physical conditioning, though adequate conditioning will remain important.
- Tactical strength & conditioning facilitators have a strong role to play not only in facilitating strength & conditioning but also in advocating for tactical personnel & actively engaging in holistic risk management efforts of the unit – think beyond physical conditioning to address risks, & use key knowledge/ understanding to advise others
- Presented here are tried and tested key considerations and approaches, with examples from the field
- Questions? Discussion?
- [rpope@bond.edu.au](mailto:rpope@bond.edu.au)