



Australian Government

Department of Defence
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Prevalence and Predictors of Dietary and Nutritional Supplement Use in the Australian Army: A Cross-Sectional Survey

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What are ‘dietary supplements’

“a food, food component, nutrient, or non-food compound that is purposefully ingested in addition to the habitually-consumed diet with the aim of achieving a specific health and/or performance benefit”¹

¹ Maughan, R.J., et al. Br J Sports Med 2018, 52, 439–455.

What are ‘dietary supplements’ and ‘nutritional supplements’?

- Categories of dietary supplements (DS) include:

- Multivitamin/multimineral
- Protein or amino acid
- Individual vitamin or mineral
- Herbal supplements
- Purported prohormones
- Combination (of above) products
- Joint health products
- Other dietary supplements (plant or animal derived or synthetic)



- Categories of nutritional supplements include:

- Sports drinks, bars and gels
- Meal replacements

DS and NS and Performance

- The International Olympic Committee consider several DS and NS have “good to strong” evidence in support of their safety and effectiveness in enhancing performance when used in specific quantities for specific purposes¹
- Some examples:

Supplement	Purpose
Caffeine	Enhance physical performance and cognition
Creatine monohydrate	Enhance high-intensity exercise capacity and lean body mass
Sports foods e.g. sports drink, sports gel, whey protein	Practical sources of nutrients when it is impractical to consume everyday foods
Dietary nitrates/beetroot juice	Enhance exercise economy, endurance exercise performance, and skeletal muscle contractile function
Glycerol	Augment fluid retention and hydration

¹ Maughan, R.J., et al. Br J Sports Med 2018, 52, 439–455.

Background

- Prevalence of any DS or NS use in US soldiers is 61% of males and 73% of females²
- Trends in DS and NS use is increasing
- DS and NS market worth US\$ 133 billion in 2016; US\$ 220 billion by 2020³
- Some DS and NS can have adverse side effects
- Australian Defence Force legislation / policy prohibits the use of dietary supplements containing substances on the World Anti-Doping Association (WADA) Prohibited List, including⁴:
 - WADA S0, S1, S2, S4, S5, S6, S7, S8 & S8 substances
 - Anabolic agents, peptide hormones, growth factors, beta-2 agonists
 - Related substances and mimetics
 - Diuretics and masking agents

² Austin, KG et al 2016. *Appl Physiol Nutr Metab*, 41, 1217–1224.

³ Zion Market Research, 2017.

⁴ Department of Defence (2011). Defence Instructions (General) Personnel 15-5. Management of the use or involvement with prohibited substances in the Australian Defence Force. Canberra, ACT.

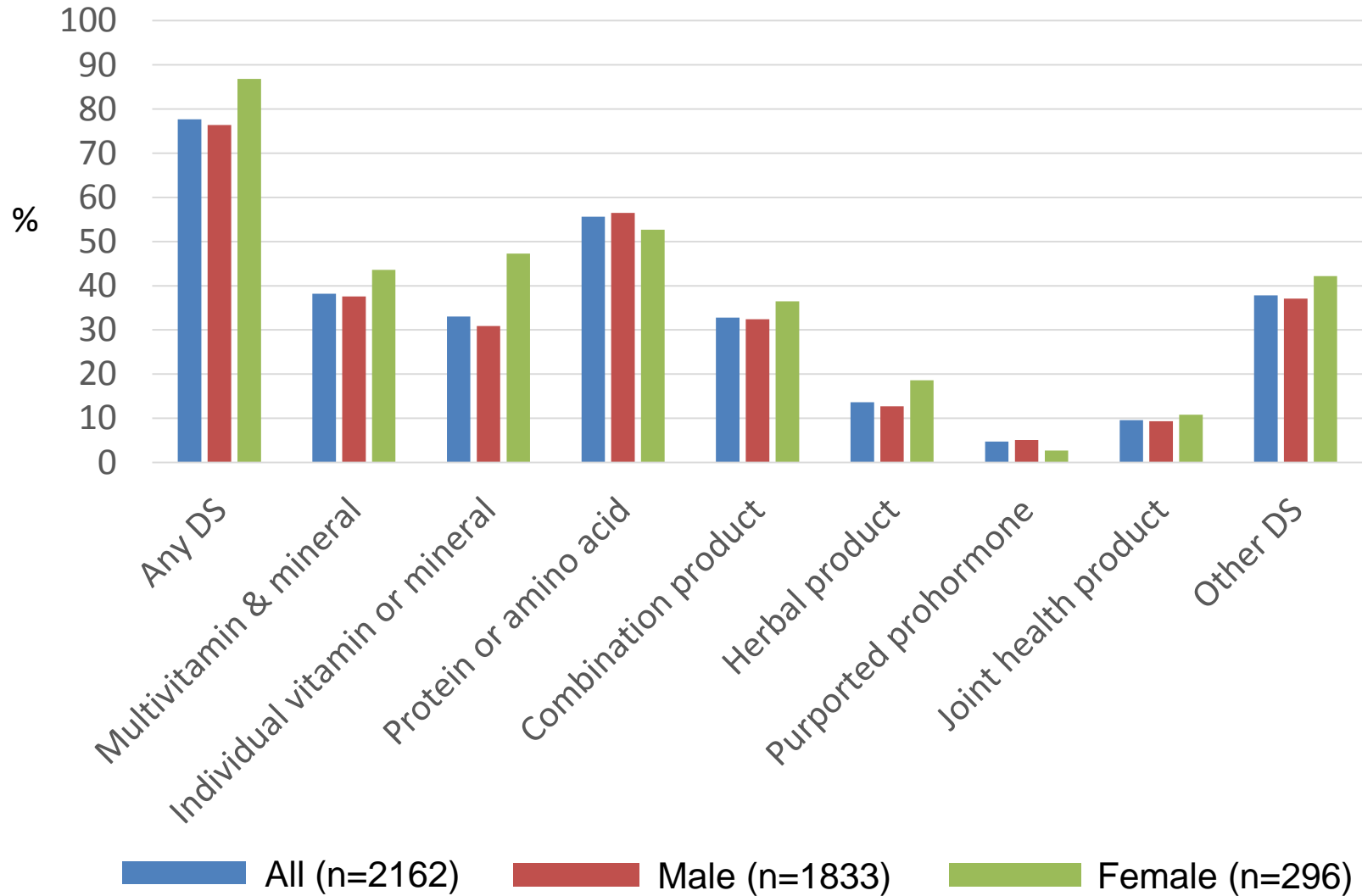
Aims

- This study aimed to:
 1. investigate the prevalence of the regular use (i.e. ≥ 1 times/week) of any DS or NS among active-duty Australian soldiers
 2. determine which demographic and military characteristics predict DS and/or NS use
 3. determine the prevalence of adverse side effects resulting from use
 4. advance our knowledge of DS and NS use among Active-duty Australian soldiers

Methods

- Cross-sectional survey administered in 2017
 - Demographic and military characteristics
 - Physical activity levels (i.e. cardio and strength training)
 - 70 generic products and 50 brand name products
- E-mail invitations to all regular Army members (approx. 25,000)
- Paper survey distribution to a convenience sample of combat arms, combat support and combat service support soldiers (approx. 500)
- Self reported side-effects e.g. rapid heartbeat, abnormal heartbeat, tremors, stomach pain, dizziness, numbness/tingling
- Prevalence of supplement use was reported as % of users
- Logistic regression was used to test for significant predictors of DS and NS use

Prevalence of DS use ≥ 1 times/week

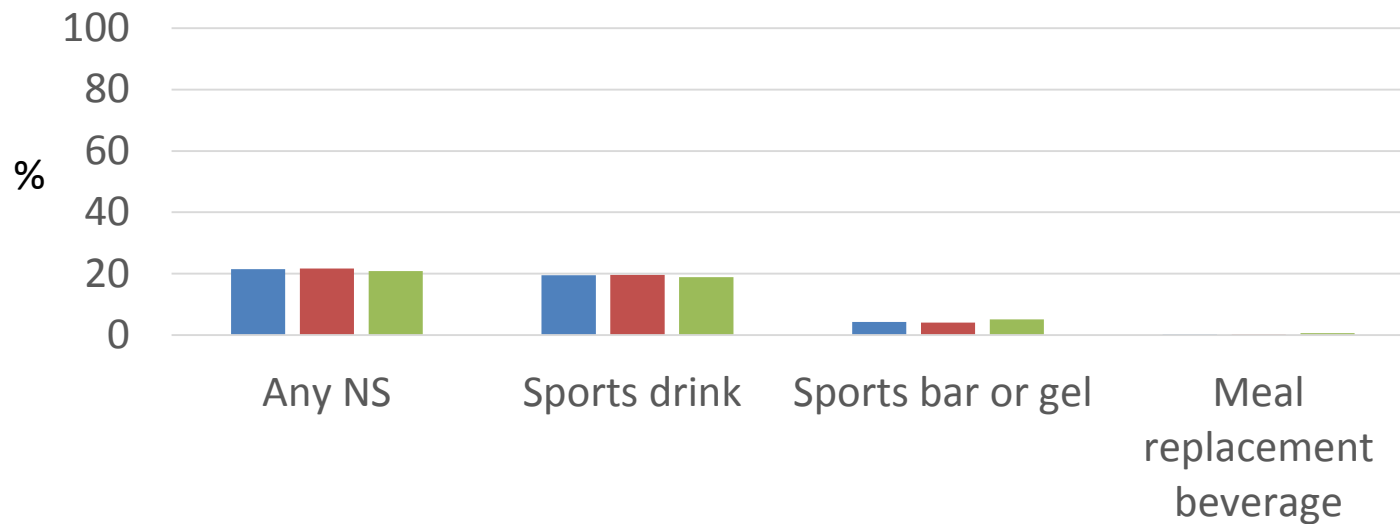


Predictors of DS use ≥ 1 times per week

Variable	Multi-vitamin / mineral	Individual vitamin / mineral	Protein / amino acid	Combination product	Herbal	Purported pro-hormone	Joint Health	Other DS
Gender	*	**						
Age	**		**	*			**	**
Special Forces	*	**						
BMI range				*		**	*	
Body weight goals	**	**	**	**		**		*
Rank								
Corps area								
Strength training	**	**	**	**	*	**	**	**
Cardio in own time		*	**	**				
Cardio within unit			*	**				
Total cardio								

Notes: significant predictors are marked with *(P<0.05) and **(P<0.001)

Prevalence of NS use ≥ 1 times/week



■ All (n=2162) ■ Male (n=1833) ■ Female (n=296)

Predictors of NS use ≥ 1 times per week

Variable	Any NS	Sports drink	Sports bar/gel
Gender			
Age	**	**	
Special Forces			
BMI range			
Body weight goals			
Rank			
Corps area			
Strength training			
Cardio in own time	**	**	**
Cardio within unit	**	**	*
Total cardio	**	**	**

Notes: significant predictors are marked with *($P < 0.05$) and **($P < 0.001$)

Significant predictors of number of DSs used

Variable	Subgroup	OR (95% CI)	p value
Gender			< 0.001*
	Male	1.00	-
	Female	1.43 (1.23–1.66)	< 0.001*
Age group			< 0.001*
	18–22	1.00	-
	23–27	1.58 (1.30–1.91)	< 0.001*
	28–32	1.56 (1.28–1.90)	< 0.001*
	33–37	1.73 (1.40–2.14)	< 0.001*
	38–42	1.51 (1.20–1.90)	0.001*
Birth range			0.005*
	<25	1.00	-
	25–30	1.21 (1.08–1.37)	0.001*
	>30	1.19 (1.00–1.42)	0.045*
Body weight goals			< 0.001*
	Trying to lose weight	1.00	-
	Trying to gain weight	1.08 (0.91–1.29)	0.016*
	Trying to maintain weight	1.17 (1.03–1.34)	0.377
	Not trying anything	0.73 (0.64–0.84)	< 0.001*
Strength training (sessions/week)			< 0.001*
		1.16 (1.14–1.18)	< 0.001*

Side effects of DS use

- One or more adverse side effects were reported by 15.9% of DS users
- The most commonly reported adverse side effects were:
 - Palpitations (10.6%)
 - Tingling in the face, fingers, arms or legs (5.5%)
 - Tremors or shaking (2.9%)
 - Flushing (2.3%)
 - Headache (2.0%)
 - Abdominal pain (1.6%)
 - Anxiety (1.4%)
 - Dizziness or confusion (0.9%)

Conclusions

- Use of several categories of DS is widespread among soldiers
- Several demographic and military characteristics significantly predicted a higher prevalence of DS use
- Future behavioural change and educative strategies should focus on promoting the use of DSs and NSs that are evidence-based only where needed and avoiding adverse side effects
- Future research should aim to understand further the motivators for supplement use and the benefits and barriers associated with their use



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ANY QUESTIONS

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Thank you for listening

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