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Published: 01/10/2019

Document Version:
Peer reviewed version

Link to publication in Bond University research repository.

Recommended citation (APA):

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Medication and dietary supplement use in athletes; prevalence and safety

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Presented by
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Background

- **MA are generally healthier overall than population peers**
  - 8 of 9 chronic conditions ↓ prevalence vs Aus population (Halar et al, 2019 in prep)

- **Supplement use is common in athletes** (40-100%; Garthe et al, IJSNEM 2018)
  - ~60-62% in masters athletes (Striegel et al, IJSM 2006; Guthrie et al, IJSNEM 2016)

- **Prevalence of concurrent prescription drug use and medicinal herbal medicines in older people varies** (Agbabiaka et al, Drugs Aging 2017)

- **Athletes, athlete support personnel, others participating in activities of the International Masters Games Association (IMGA) - bound by IMGA Anti-Doping Rules** (approved by WADA 2015, IMGA 2016)
Aim

Describe the prevalence of medication and supplement use for treatment of chronic conditions, and dietary supplement/sports food use in masters athletes

Prohibitions of medications used and potential for interactions were also investigated.
Methods

- 2017 AMG: n=4848, 2018 PPMG: n=14456
- anonymous online survey (10-20 mins)

Research Opportunities

Through our partnership with the University of Tasmania, there are a number of Australian Masters Games related research projects being undertaken by University of Tasmania and University of Sydney, with opportunities for both athletes and volunteers to participate.

This week is the launch of the University of Sydney’s survey to investigate the prevalence of nutrition-related chronic conditions in Australian Masters athletes.

CLICK HERE to participate in the research.
Methods

• demographics, health conditions, treatment methods, dietary supplements/sports foods (DSSF) collected
  • representativeness: Pearson's Chi-squared, Kruskal-Wallis rank sum test
  • medications/supplements (including herbal) treatments doubly extracted
    • medications prohibitions categorised – international standards e.g. WADA
  • dietary supplements and sports foods collated
  • single ingredient/branded dietary supplements checked for interactions
  • measures to ensure supplement safety collated
Results

Years competing at masters level

- n=817 (53.7 ± 14.0 yrs, 60.8% F)
- 84.7% (n=692) Aus, 9.4% (n=77) NZ
- vs all MG participants (p<0.001):
  - ↑ age
  - <20-39yo, >60+
  - ↑ F
- Australian residency similar
- Top ten sports similar
Results

Number of therapies per condition

Condition
- Food Allergy/Intolerance
- Bone
- Diabetes
- Asthma
- Mental Health
- Heart/Circulatory
- Arthritis

Number of therapies reported**

- Supplements
- Medications
- Medications
- Supplements
- **one person could nominate more than one therapy

Medical conditions
- 48.1% (n=393) with current condition
- 25.3% (n=206) took medications
- 7.1% (n=58) used supplements/herbal therapies

Medications
- Asthma (26.6% usages): Ventolin, Seretide, others
- Heart/Circulatory (23.4% usages): Telmisartan, Perindopril, Rosuvastatin, others

Supplements
- Arthritis/bone (64.1% usages): glucosamine, turmeric, vitamin D, calcium
- Obesity (22.8% usages): shakes, vitamins/minerals

*does not include cancer or obesity (therapy for obesity not collected in AMG, medications for obesity not collected PPMG)

**one person could nominate more than one therapy
Results

- 46.5% (n=380) used 1-16 DSSF

Types of supplements used by masters athletes

- Carnitine, β-alanine, beetroot juice, exotic berries, bicarbonate, quercetin, tart cherries, HMB

- Sports confectionary

- Chondroitin sulphate, Vitamin E

Sports Foods

- Sports drink
- Whey protein
- Electrolyte replacement
- Sports bars

Performance

- Creatine
- Glutamine
- Caffeine and caffeine-containing foods

Medical

- Fish oils
- Glucosamine
- Probiotics
- Vitamin C
- Iron
- Vitamin D
- Other AOs
- Colagen
- Other

- Multivitamins
Results

• **Interactions**
  - 46.3% used ≥2 therapies/DSSF
  - 2.1% known interaction
    - e.g. fish oils + antihypertensives, creatine + nephrotoxic drugs, glucosamine + warfarin*


• **Potential prohibitions**
  - n=81 individuals (106 usages)
  - β-2 agonists (n=52), Glucocorticoids (n=34), combination (n=2)
    - asthma, low BP, rapid/irregular heart beat
  - β-blockers (n=6)
    - hypertension, heart failure, rapid/irregular heart beat, other heart condition
  - Diuretics/masking agents (n=4)
    - fluid retention, heart failure
  - Hormone/metabolic modulators (n=5)
    - diabetes, obesity
  - Stimulant (n=1)
    - obesity

*Major = Do not use combination; contraindicated; strongly discourage patients from using this combination; a serious adverse outcome could occur.

Moderate = Use cautiously or avoid combination; warn patients that a significant interaction or adverse outcome could occur.

Results

• Interactions
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    • e.g. fish oils + antihypertensives, creatine + nephrotic drugs, glucosamine + warfarin

Potential prohibitions

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• Stimulant (n=1)
  • obesity


Moderate – Do not use combination; contraindicated; strongly discourage patients from using this combination; a serious adverse outcome could occur.

Moderate – Use cautiously or avoid combination; warn patients that a significant interaction or adverse outcome could occur.
Results

Measures taken to ensure supplement safety*

- Recommendation of Health/Sport professional
- Recommendation of Supplement Company
- Check ASADA/WADA Prohibited Substances List
- Recommendation of other Athlete/s
- 3rd party testing
- I Use an App
- Don't Know

*athletes could nominate more than one option
Limitations

- Internet platform (may also be a strength)
- Acute medication use not captured
- Interactions: multi-ingredient supplements difficult, did not check drug-to-drug
- Not possible to link safety checking methods with individual supplements
- Generalisability
  - AMG recruitment on site as well as electronically → different sports?
  - PPMG dataset on all participants was limited → limit demographic comparisons
  - majority Australian
  - Under-represented in younger age groups, over-representation of females → influence consumption of supplements (types/numbers) and medications
Conclusions and implications

– Potential for misuse of supplements
  – supplements may interact with medications
  – possibility of doping violations
  – may not use appropriate measures to check safety

– MA likely to use supplements in combinations
  – performance supplements used with other supplements (Gifford et al, ECSS 2018)
  – multiple nutrition supplements may exceed upper limits
Conclusions and implications

– Medication/supplement for treatment and DSSF use is common among MA

– Many inexperienced MA may not be aware of the issues

– Health professionals
  – be pro-active in asking about medication and supplement use
  – need to be aware of risks – doping violations, adverse interactions/effects

Acknowledgements

The authors would like to thank our study participants, our University of Tasmania colleagues (especially Lyndal Bond, Sandy Murray, Simone Lees), AMG and PPMG organisers and volunteers, Cameron Hart (CEO PPMG).

Funding for Dr Janelle Gifford to attend this conference is via the E-MCA Travel Support Scheme supporting Early-Mid Career Researchers in the Faculty of Health Sciences, University of Sydney, Australia

THANK YOU