# Impact of Bodybuilding Supplements on Mood Disorders Samantha Gonzales, PharmD, MBA, BCPS and John Pinsonnault, PharmD, BCPS, BCPP



**J.S. Department of Veterans Affairs** 

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|---|--|--|--|--|
| <ul> <li>Herbal and dietary supplement use in the United States has increased from \$9.6 billion in 1994 to \$36.7 billion in 2014<sup>1-2</sup></li> <li>Surveys of US military members suggests dietary supplement as high as 60-70%<sup>3-4</sup></li> <li>Supplements purported to enhance physical performance ofter contain many untested ingredients and run the risk of adulteration<sup>5</sup></li> <li>A report among Navy and Marine Corps personnel found 22% supplement users have experienced adverse effects<sup>6</sup></li> <li>As the number of dietary supplements used increases, so doe the occurrence of adverse effects<sup>7</sup></li> </ul>  |  |  |  |  |
| Austin, et al (2014) <sup>8</sup>   | Hatch, et al (2018) <sup>9</sup>   |  |  |  |
| <ul> <li>Assessed multiple mood<br/>symptoms using the Quick<br/>Mood Scale</li> <li>Protein/amino acid users<br/>reported feeling more awake<br/>and aggressive while steroid<br/>analog users reported feeling<br/>more aggressive</li> </ul>   | <ul> <li>Assessed sensation seeking<br/>behaviors among dietary<br/>supplement users versus non-<br/>users</li> <li>Users of bodybuilding dietary<br/>supplements scored higher in<br/>boredom susceptibility, thrill<br/>seeking, disinhibition, and<br/>intensity than nonusers</li> </ul> |  |  |  |
| <ul> <li>Endertements</li> <li>Lindstrom A, Ooyen C, Lynch ME, Blumenthal M, Kawa A. Sales of herbal dietary supplements increase by 7.9% in 2013, marking a decade of rising sales. HerbalGra 2014;103:52-56.</li> <li>Nutrition Business Journal. Supplement Business Report 2015. New York: Penton; 2015.</li> <li>Acket TC, Black LL, Stussman BJ, Barnes PM, Nahin RL. Trends in the use of complementary health approaches among adults: United States, 2002-2012. National F statistics Reports no. 79, Hayattsville, MD: National Center for Health Statistics; 2015.</li> <li>Bailey RL, Gahche JJ, Lentino CV, Dwyer JT, Engel JS, Thomas PR, et al. Dietary supplement use in the United States, 2003-2006. J Nutr. 2001;141:261-266.</li> <li>Deuster PA, Lieberman HR. Protecting military personnel from high risk dietary supplements. Drug Test Anal. 2016;8(3-4):431-3.</li> <li>Knapik JJ, Trone DW, Austin KG, Steelman RA, Farina EK, Lieberman HR. Prevalence, adverse events, and factors associated with dietary supplement and nutritional supplement use by US Navy and Marine Corps personnel. J Acad Nutr Ditt. 2016;116(9):1423-42.</li> <li>Austin KG, Farina EK, Lieberman HR. Self-reported side-effects associated with use of dietary supplements in an armed forces population. Drug Test Anal. 2016;8(3-9):43.</li> <li>Austin KG, McGraw SM, Lieberman HR. Multivitamin and protein supplement use is associated with positive mood states and health behaviors in US Military and Corps.</li> <li>Austin KG, McGraw SM, Lieberman HR. Multivitamin and protein supplement use is associated with positive mood states and health behaviors in US Military and Corps.</li> <li>Hatch AM, Cole RE, DiChiara AJ, McGraw SM, Merrill EP, Wright AO, et al. Personality traits and occupational demands are linked to dietary supplement use in soldie cross-sectional study of sensation seeking behaviors. Mil Med. 2018. Aug 20. Doi:10.1093/milmed/usy201. [Epub ahead of print]</li> </ul> |  |  |  |  |
| <ul> <li>The primary outcome was to determine if bodybuilding</li> </ul>  |  |  |  |  |

- supplement use was associated with worsening mood symptoms compared to those who did not report taking these supplements, as measured by the use of psychotropic medications
- Secondary outcomes include comparing:
  - 1) Average number of psychotropic medications trialed
  - 2) Psychiatric rating scales
  - 3) Number of hospital care visits related to mental health

**Disclosure Statement:** Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

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### **Primary Outcome**

Psychotropic me n (%)

Secondary out

### Mean medication trialed

### **Secondary outcome: Psychiatric rating scales**

Mean PHQ-9 sco Mean GAD-7 scol

### Secondary outcome: Mental health related hospital visits

Hospitalizations Outpatient visits Crisis line ER visits **Residential treat** 

- Most commonly prescribed medication classes were antidepressants, sleep aids, and anxiolytics
- No significant difference found between psychiatric rating scales

### Limitations:

- Retrospective data selection bias
- Patients are not routinely asked about bodybuilding supplement use leading to under reporting
- Small sample size after matching patients

Based on the results found in this study, bodybuilding supplement use is associated with increased psychotropic medication use. Further research is needed to determine what mood states are most affected.







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## RESULTS

|                            | Exposed<br>(n=150) | Non-Exposed<br>(n=150) | p-value |  |  |
|----------------------------|--------------------|------------------------|---------|--|--|
| edication,                 | 121 (80.7%)        | 59 (39.3%)             | <0.0001 |  |  |
| tcome: Medications trialed |                    |                        |         |  |  |
|                            | Exposed<br>(n=150) | Non-Exposed<br>(n=150) | p-value |  |  |
| n trialed                  | 3.23               | 1.42                   | <0.0001 |  |  |

|     | Exposed<br>(n=68) | Non-Exposed<br>(n=16) | p-value |
|-----|-------------------|-----------------------|---------|
| ore | 13.19             | 16.31                 | 0.0565  |
| ore | 12.44             | 13                    | 0.7258  |

| ue  |
|-----|
| 60  |
| 001 |
| 49  |
| 97  |
| 46  |
|     |

## DISCUSSION

- Bodybuilding supplement use was correlated with an increase in
- prescription psychotropic medications

## CONCLUSIONS