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Introduction
Introduction

About dotFIT Worldwide

- Science-based research and support
  - See dotFIT Worldwide Faculty & Advisory Board below
- Education and certification from The National Academy of Sports Medicine (NASM)
  - The market leader in Fitness, Sports Medicine and Sports Performance credentials
  - NASM activates over 25,000 credentials annually with over 100,000 professionals worldwide
  - Works with over 6,000 health clubs and all professional sports organizations
- Evidence-based tools and applications
  - R&D and support for nutrition/weight control and exercise programming for all ages and goals
  - Web-based, client- and trainer-centric programming: exercise, menu plans with supplement screening, continuous feedback to client and/or trainer based on measurement inputs and goal
- Worldwide professional delivery network
  - Live fitness professionals as well as phone and e-coaching platforms
  - Programs can connect to body sensing/tracking devices
  - Calorie expenditure, steps, physical activity, etc.
- Unlimited education: For consumers and professionals via website, live webinars, certifications, and direct access to R&D team via our toll-free phone number (877.436.8348)
- Complete, holistically integrated line of pharmaceutically manufactured dietary supplements and fitness foods including home delivery platform

dotFIT Worldwide Faculty and Advisory Board

<table>
<thead>
<tr>
<th>INSTITUTIONAL RELATIONSHIPS AND ADVISORY RESOURCES</th>
<th>CHIROPRACTIC HEALTH AND WELLNESS</th>
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<tbody>
<tr>
<td>University of North Carolina</td>
<td>Eric Plasker, DC</td>
</tr>
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<td>Arizona School of Health Sciences</td>
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<td>University of Hawaii</td>
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<th>NUTRITION, DIETETICS AND WEIGHT CONTROL</th>
<th>MEDICAL SCIENCE, PHARMACEUTICALS AND DIETARY SUPPLEMENTS</th>
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<tr>
<td>Jill Fairweather, MS, RD</td>
<td>Jim Starr-Kalafat</td>
</tr>
<tr>
<td>Gay Riley, MS, RD, CCN</td>
<td>Timothy Ziegenfuss, PhD, CSCS, EPC</td>
</tr>
<tr>
<td>Alan Titchenal, PhD</td>
<td>Michael Oviedo, MS, NASM-PES, CSCS</td>
</tr>
<tr>
<td>Kat Barefield, MS, RD, NASM-CPT &amp; PES, ACSM-HFS</td>
<td>Dr. Steven Shassberger, DO</td>
</tr>
<tr>
<td></td>
<td>Robinson Pharma, Inc. (Pharmaceutically &amp; drug-licensed facility, including scientific advisory board)</td>
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<tr>
<td>National Academy of Sports Medicine</td>
<td>Dr. Micheal A. Clark, DPT, MS, PT, PES</td>
</tr>
<tr>
<td></td>
<td>Dr. Darin Padua, PhD, ATC</td>
</tr>
<tr>
<td></td>
<td>Dr. Kevin Guskiewicz, PhD, ATC</td>
</tr>
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<td>Dr. Steve Marshall, PhD</td>
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<tr>
<td>Scott Pullen MS, CES, PES</td>
<td></td>
</tr>
<tr>
<td>National Academy of Sports Medicine staff</td>
<td></td>
</tr>
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dotFIT Worldwide’s Position on Use, Recommendations & Manufacture of Dietary Supplements

The function of dietary supplement preparations is to provide a safe vehicle for delivering precise amounts of desired isolated nutrients and compounds in a low to no calorie form with the purpose of enhancing health, sport and fitness goals, i.e. dietary support.

Individual outcomes from the use of dietary supplements, as with drugs, are predicated on the physiological and psychological state of the recipient as well as dosages, regimen compliance, manufacturing processes including the use of proper delivery systems, and ingredient forms or origins.

dotFIT’s position on overall dietary supplement use and recommendations

Dietary supplement products must be 100% defensible through scientific research, not used to treat medical conditions and only recommended in support of the following goals:

- Preserving health
  - Objective: potentially stave off chronic or age-related disease by improving the daily nutrient intake achieved through diet alone
- Safely enhance sport and fitness outcomes
  - Objective: hasten and support fitness/weight control goals
  - Objective: improve training-induced performance results

Position on use of supplements for health

Multivitamin and mineral formula (MVM): all persons of all ages should use a daily MVM to complement one’s best efforts to define and consume a proper diet.

At a minimum, MVM supplementation is insurance against common and unavoidable shortcomings driven by typical daily diets and local food supply or availability. At best, the daily increased level of all known vital nutrients supplied by the MVM may indeed allow optimal cellular performance. Levels of nutrition delivered by diet combined with a MVM (significantly higher but well within a safe range) has more potential than diet alone (especially within a range of acceptable calories) to supply all cellular entities/enzymes with enough materials to operate at full capacity thus avoiding a potential triage effect that may be at the root of many chronic and age-related diseases. (see Appendix I: dotFIT Worldwide’s Position on Vitamin & Mineral Supplementation).

Calcium & Vitamin D: supplement if daily needs of calcium (1000-1200mgs/day) and vitamin D (400-1000 IUs/day) are not met by food, sunlight and multivitamin mineral formula. There is almost no reason to supplement calcium alone.
Position on final individual recommendations

All dotFIT programs prepared by dotFIT Worldwide are designed to screen individuals based on physical characteristics and goals in order to safely and properly integrate dietary supplements into their fitness programs to accomplish the above stated outcomes.

Position on manufacturing and facts regarding dotFIT products

Before nutritional compounds become products or are recommended for consumer use, all ingredients must survive rigorous legal and scientific review and testing. The following conditions are met:

- Identify best, current clinical research supporting use of active ingredients (evidence-based)
- Identify data supporting safety and efficacy including long-term empirical data (see Table 1 below and Evaluation Guidelines)
- Identify proper ingredient dosage and forms matched to positive outcomes from clinical data
- As science progresses, all products must be updated immediately

Products are designed in appropriate delivery forms established by each product’s ingredients, desired target tissues, and the amounts required in specific time periods to deliver on the product claims. In other words, validate that the right ingredients and amounts get to the right places at the right times.

- Customized finished products are tested in a simulated human digestive system to validate whether release patterns match their respective designed criteria in order to assure the desired results
- Dietary supplement products and powders are manufactured in a FDA-registered pharmaceutical facility, in compliance with Good Manufacturing Practices (GMP)
- Ingredient testing for purity, potency and delivery from raw materials to finished product
- Final product rigorous testing, both in-house and through third-party, FDA-approved and NSF-certified laboratories, assures users that all nutritional claims meet or surpass FDA guidelines, USDA guidelines, and industry norms
- All formulas must be able to work in synergy with other dotFIT products in order to avoid nutrient overages, which are common with typical, indiscriminate supplement use

dotFIT programs consider diet, medications, and other dotFIT products before a personalized dietary supplement recommendation is generated. This assures the user remains in a safe and optimal nutrient range throughout the day.

dotFIT foods cannot be “spiked” with unnecessary nutrients. Most other products in this space (e.g. bars, shakes, ready-to-drinks, etc.) are heavily spiked with many nutrients that can lead to undesirable levels within the body when combining multiple manufacturers, products and normal food intake. When consuming only dotFIT products, as directed with one’s normal daily food intake, the recipient can be assured of keeping the body at a safe and optimal nutrient level.

dotFIT must provide complete customer product/program education and support, including full disclosure regarding product ingredients, safety and manufacturing.

Product Testing Documentation

- Tests that include disintegration, dissolution, stability, purity (no contaminants) and potency, which includes the finished product’s certificate of analysis
- In-house and 3rd party product validation and testing methods based on all available certified protocols including applicable USPs (United States Pharmacopeia, an official compendia of standards) and other international compendia – also see dotFIT Product Manufacturing and Testing document in Appendix
- Appropriate peer-review research that supports the dosage and purpose of the compound
- Proof of equivalence or evidence that a given dose of a product must contain a certain amount of key ingredients in order to produce a known effect
- Proof that products will be absorbed and utilized by the body
- Assurance that the substance is nontoxic, along with list of any known potential side effects and drug interactions
Product Evaluation Guidelines and Scoring

Only products/ingredients that score a four or five out of five possible points are potential dotFIT Worldwide-authorized products and may become integrated into holistic fitness planning (e.g. combined with diet and movement planning). See Table 1.

Review of Products

A. Criteria for evaluation: to establish product integrity
   i. History of safe use
   ii. Cultural or traditional medicine
   iii. Anecdotal or empirical reports
B. Product formulation
C. Individual ingredients

Research documenting claims, performed on humans

D. Published in peer reviewed literature – citation(s)
   i. Product formulation
   ii. Individual ingredients
E. Books/brochures and company marketing brochures or sales sheets
   i. Product formulation
   ii. Individual ingredients
F. Privately sponsored, unpublished reports or studies
   i. Product formulation
   ii. Individual ingredients
G. Research supporting either a biochemical or physiological rationale

Research documenting claims, performed on animals

H. All same as above

Safety Studies

I. Animal toxicology studies

J. In vitro toxicology studies
K. Human clinical evaluations
   i. Dosage and route of administration
   ii. Toxicity
L. Human anecdotal/empirical reports
   i. Dosage and route of administration
   ii. Toxicity

Adverse Event Reports

M. Center for Disease Control (CDC)
N. Food and Drug Administration (FDA)
O. World Health Organization (WHO)
P. State Health Departments
Q. Trial Lawyers Association: personal injury litigation groups

Food and Drug Administration

The regulatory agency for approved claims with medical – scientific evidence for documentation of educational marketing claims in advertising and 'third party' literature under DSHEA®.

R. Structure (anatomy) claims
S. Function (physiology) claims
T. ‘Life Event’ claims
U. Fitness claims
V. Anabolic/weight gain claims
W. Androgenic/strength and endurance claims
X. Fat loss (lipolysis) claims
Y. Metabolic rate (BMR) and lean body mass claims
Z. Cardiovascular tone/aerobic fitness claims
AA. Recovery time/muscle burn' claims

* DSHEA is the Dietary Supplement Health Education Act of 1994. The DSHEA established a formal definition of “dietary supplement” using several criteria. A dietary supplement
  • is a product (other than tobacco) that is intended to supplement the diet that bears or contains one or more of the following dietary ingredients: a vitamin, a mineral, an herb or other botanical, an amino acid, a dietary substance for use by man to supplement the diet by increasing the total daily intake, or a concentrate, metabolite, constituent, extract, or combinations of these ingredients
  • is intended for ingestion in pill, capsule, tablet, or liquid form
  • is not represented for use as a conventional food or as the sole item of a meal or diet
  • is labeled as a “dietary supplement”
  • includes products such as an approved new drug, certified antibiotic, or licensed biologic that was marketed as a dietary supplement or food before approval, certification, or license (unless the Secretary of Health and Human Services waives this provision)

Table 1—Product Evaluation Score: Rating of Evidence
Only products that score a four or five rating are potential dotFIT authorized products.

<table>
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<th>SCORE</th>
<th>RATING</th>
<th>DOCUMENTATION/ EVIDENCE CRITERIA</th>
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<tbody>
<tr>
<td>5</td>
<td>Excellent (&gt;90% Probability)</td>
<td>Product formulation claims documented by human studies</td>
</tr>
<tr>
<td>4</td>
<td>Very Good (&gt;70%&lt;90% Probability) (High Probability)</td>
<td>At least two (2) of the product's formulated ingredients claims documented by human studies</td>
</tr>
<tr>
<td>3</td>
<td>Good (&lt;70%&gt;30% Probability) (Medium Probability)</td>
<td>One of the product's formulated ingredients claims documented by human studies</td>
</tr>
<tr>
<td>2</td>
<td>Fair (&gt;10%&lt;30% Probability) (Low Probability)</td>
<td>No human studies. However, at least two (2) of the product's formulated ingredients have a biochemical-physiologic rationale</td>
</tr>
<tr>
<td>1</td>
<td>Poor &lt;10% Probability) (Questionable Probability)</td>
<td>No human studies. However, at least one (1) of the product's formulated ingredients have a biochemical-physiologic rationale</td>
</tr>
<tr>
<td>0</td>
<td>Fails (Zero Probability – “Hype”)</td>
<td>No documented human studies, and no biochemical–physiologic rationale for any ingredients</td>
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The Products
Included in this guide are the following for each dotFIT product:
• Goal
• Rationale
• Typical Use
• Dosage
• Definitions
• Precautions
• Contraindications
• Adverse Reactions
• Upper Limits/Toxicity

Definitions

Goal
Describes the purpose of the formulation, including each product’s intended outcome.

Rationale
Lists the ingredient’s basic mechanisms of action and their respective function in participating in the product’s intended outcome or goal.

Typical Use
Describes the known group of users that may experience the product’s potential listed benefits.

Dosage
Lists the dosages used in studies and historically with the greatest potential for safety and efficacy.

Precautions
The compounds in this Supplement Reference Guide (SRG) are considered safe for the general population at the proper dosage. Under this heading and the subheadings below, a summary of safety considerations will be called out for potential vulnerable subpopulations.

Contraindications
Describes conditions in which the compound might be avoided or signal caution, including people with unique genetic predispositions, certain pre-existing disease states or persons taking specific prescription medications.

Adverse Reactions
Lists possible side effects and/or explains commonly reported reactions that may not be clinically supported or causally related to the compound. Case reports may be used to explain theoretical risk when clinical trials or specific studies are not available. Case reports are not considered scientifically valid for proving efficacy or documenting risks, but may be used to highlight an unlikely but potential safety issue.

Upper Limit/Toxicity
Gives the highest known dose that still maintains a large margin of safety and any known toxicity data. When available the Recommended Daily Allowance (RDA), No Observed Adverse Effect Level (NOAEL), Lowest Observed Adverse Effect Level (LOAEL) and the lethal dose 50 (LD50) values will be given. The LD is the dose at which 50% of the test animals (rats or mice) died and is usually only used as a reference for the relative toxicity of a substance.

The Tolerable Upper Intake Level or Upper Limit (UL) is the maximum level of total chronic (long-term) daily intake judged unlikely to pose a risk of adverse health effects to most of the healthy population, including sensitive individuals, throughout their life stages. The UL is intended to provide a safety standard for dietary supplements such that no significant or unreasonable risk of illness or injury would arise at or below this intake level.
References


2 [No authors listed] Multivitamins: should you buy this insurance? Studies have raised doubts about vitamins, but the multivitamin pill is still a good idea. Harv Health Lett. 2006 Sep;31(11):3-5.


The Products
Dietary Supplements for Health

health dotFIT

The goal of dietary supplements in this category is to help establish and preserve health or potentially stave off chronic or age-related disease by delivering important nutrient compounds that may be unattainable from diet for any of the following reasons (also see Appendix I: dotFIT Worldwide’s Position on Vitamin & Mineral Supplementation):

• Insufficient food intake2,3,4
• Increased needs that are not met by diet alone4,5,6,7,8,9,10,11,12,13,14
• Special populations, age-related requirements or practicality of foods sources13,14,15
• Lack of interest in or avoidance of essential food groups16,17,18,19,20,21,22,23
• Low body fat maintenance2,24,25,26
• Variables of actual nutrient content of food27,28,29,30

• In the modern world, where many people maintain a sedentary lifestyle, maintaining a healthy weight often requires eating too few calories to get proper nutrition through food alone31,32,33
• Low sun exposure14,34,35,36,37,38,39
• Inability to define the perfect diet40,41,42,43

References

10 Manore MM. Chronic dieting in active women: what are the health consequences? Womens Health Issues 1996 Nov-Dec;6(6):332-41
17 Striegel-Moore RH, Thompson DR, Affenito SG, Franko DL, Barton BA, Schreiber GB, Daniels SR,


27 Clark LC; Combs GF Jr; Turnbull BW; Slate EH; Chalker DK; Chow J; Davis LS; Glover RA; Graham GF; Gross EG; Krongrad A; Lesher JL Jr; Park HK; Sanders BB Jr; Smith CL; Taylor JR. Effects of selenium supplementation for cancer prevention in patients with carcinoma of the skin: A randomized controlled trial. Nutritional Prevention of Cancer Study Group. JAMA 1996 Dec 25;276(24):1957-63.


Mar;95(3):341-4, 347.
dotFIT Multivitamin & Mineral Formulas

Goal
The purpose of supplementing the diet with a properly designed multivitamin and mineral formula (MVM) should be to not only supply essential nutrients in an attempt to prevent nutrient deficiencies, but to also overcome marginal deficiencies from today's common limitations in obtaining sufficient and optimal nutrient intake. Therefore, using the latest research and recommendations from the industry's leading experts, the goal of the dotFIT multivitamin and mineral formulas (MVM) is to deliver a combination of nutrients in a controlled-release preparation that, when used properly, has the greatest chance helping stave off chronic disease, especially when compared to typical mass market formulas.

Rationale
Defining the perfect diet has been a laborious task for the nutritional sciences for decades. Likewise, specifying the optimal intake of vitamins and minerals is difficult in the face of continuing nutrient research. This makes giving concrete nutrient recommendations challenging. For most nutrients, there is a large therapeutic range within which the average person will receive benefit and simultaneously remain below the threshold that can yield adverse events. It is one matter to define nutrient recommendations, but another entirely more frustrating endeavor to actually consume the recommended dosages through the course of a normal day with typical foods. The notion that food alone will satisfy all physiological needs of the body for proper and ideal nutrient intake is outdated. Obstacles to proper eating and ideal nutrient intake include

- Insufficient food intake
- Increased needs that are not met by diet alone
- Lack of interest in or avoidance of essential food groups
- Low body fat maintenance
- Variables of actual nutrient content of food
- Unable to move enough to eat enough
- In the modern world, where many people maintain a sedentary lifestyle, maintaining a healthy weight often requires eating too few calories to get proper nutrition through food alone
- Low sun exposure
- Inability to define the perfect diet

It is in the context of all the above that dotFIT multivitamin and mineral formulas are made, including the nutrient values contained in today's typical diet and the different overall nutrient needs based on age, gender, and activity, each for a specific user. The dotFIT multivitamin and mineral formulas are used at the specified times throughout one’s lifetime. In addition, they include the coverage of an active person's basic antioxidant needs.

dotFIT formulas are engineered with ideal health and functioning as the goal, not the media driven need to see a lot of popular ingredients in a pill. An example is the decision to remove calcium from dotFIT MVM formulas. Due to the variety of nutrients in a MVM, a decision has to be made if something goes in because it is needed (in the proper dosage) or if it is just “window dressing” (included but in an ineffective amount just so it can appear on the label). If one is failing at meeting their calcium needs through the diet, then a calcium supplement is warranted. This required dose will far exceed that included in any effective MVM formula because it would make the MVM far too large to comfortably ingest. The dotFIT approach includes a specific calcium supplement to address that need. Also, calcium supplementation concurrent with iron supplementation can interfere with the absorption of iron.

Another example of the dotFIT difference is that most experts believe the current recommendation for vitamin D is far too low, so dotFIT is taking the lead on ensuring optimal vitamin D intake. More and more research is emerging linking low vitamin D status with numerous chronic health issues, not just its relationship with calcium absorption. Population studies show that those with the lowest vitamin D intakes have a higher rate of mortality from all factors, especially cardiovascular disease and cancer. Typical dosing with dotFIT MVM formulas will give the user a full 1000 IU.

The human digestive tract is a unique, amazing and dynamic environment. Due to varying pH levels and availability of receptors, certain vitamins and minerals are best absorbed over time throughout many areas of the digestive tract. A controlled-release delivery system not only ensures that nutrients make it through...
the harsh acid environment of the stomach (which is a digestive organ, not an absorptive one) but that that they are released overtime and in their proper forms.\textsuperscript{52,65,66,67,68,69,70}

The goal is total tissue saturation with the nutrients needed to optimally perform all cellular activities, thus ensuring the cells have the potential to function at full capacity, 24 hours a day.

Table 1: dotFIT MVM Formulas & Ingredients (1 tablet)

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Unit</th>
<th>Women's</th>
<th>Active</th>
<th>Over50</th>
<th>Kids</th>
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<tr>
<td>Vitamin A</td>
<td>IU</td>
<td>1000</td>
<td>500</td>
<td>1000</td>
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<tr>
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<td>IU</td>
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<td>600</td>
<td>1000</td>
<td>250</td>
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<tr>
<td>Beta Carotene</td>
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<td>5000</td>
<td>4000</td>
<td>5000</td>
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</tr>
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<td>100</td>
<td>3</td>
</tr>
<tr>
<td>Biotin</td>
<td>mcg</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>Pantothenic Acid</td>
<td>mg</td>
<td>15</td>
<td>0</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Iodine</td>
<td>mcg</td>
<td>100</td>
<td>25</td>
<td>75</td>
<td>50</td>
</tr>
<tr>
<td>Magnesium</td>
<td>mg</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>Zinc</td>
<td>mg</td>
<td>12</td>
<td>7.5</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Selenium</td>
<td>mcg</td>
<td>50</td>
<td>50</td>
<td>70</td>
<td>20</td>
</tr>
<tr>
<td>Copper</td>
<td>mg</td>
<td>0</td>
<td>.5</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Chromium</td>
<td>mcg</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Vitamin K</td>
<td>mcg</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>30</td>
</tr>
</tbody>
</table>

*Source: Cholecalciferol (D3), except for the Vegetarian, which is ergocalciferol (D2).*
Table 2: dotFIT Multivitamin and Mineral Recommendations

<table>
<thead>
<tr>
<th></th>
<th>ActiveMV (1 tablet)</th>
<th>ActiveMV (2 tablets)</th>
<th>Women’sMV</th>
<th>Over50MV</th>
<th>KidsMV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males/Females: 2-4 years of age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males/Females: 5-11 years of age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males: 12-17 years of age</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males: 18-50 yrs (not athletes or intense exercisers)</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males: 18-50 yrs who are athletes or intense exercisers</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males: 51-64 yrs (not athletes or intense exercisers)</td>
<td></td>
<td></td>
<td></td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Males: 51-64 yrs who are athletes or intense exercisers</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males: 65+ years of age</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females: 12-17 years of age</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females: 18-50 yrs (not athletes or intense exercisers)</td>
<td></td>
<td></td>
<td></td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Females: 18-50 yrs who are athletes or intense exercisers</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females: 51-64 yrs (not athletes or intense exercisers)</td>
<td></td>
<td></td>
<td></td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Females: 51-64 yrs who are athletes or intense exercisers (&gt;150 lbs)</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females: 65+ years of age</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary

Purpose

- dotFIT formulas can be used by EVERYONE unless instructed otherwise for medical reasons
- Based on the sophisticated controlled delivery systems and progressive formulations, dotFIT multivitamin and mineral formulas would be considered today’s ideal formulation, especially when compared to popular common multivitamin products that must compete on price rather than efficacy

Unique Features

- All products are regularly updated with the most recent recommendations from the Institute of Medicine (IOM) and the industry’s leading experts i.e. progressive evidence-based formulations
- All formulas are part of the dotFIT program for safe and ideal compatibility with all products when following program supplement recommendations
- Different formulas to meet the unique needs of different populations
- Formula and use follow strict scientific research criteria
- The nutrients are in their proper forms, ratios and strengths to help maintain a safe and optimal range 24 hours/day
- Uses the most sophisticated controlled-release delivery systems to ensure ideal nutrient levels and prevent tissue over-saturation and losses
- Manufactured in a FDA-registered facility, in compliance with Good Manufacturing Practices (GMPs) exclusively for dotFIT, LLC

Precautions

dotFIT multivitamin and mineral formulas are considered safe for the general population at the proper dosage. Given the risk to benefit ratio, the long-term use of dotFIT multivitamin and mineral formulas is much safer than consuming the typical American diet without nutrient augmentation.1,2,4,5,6

Contraindications

dotFIT multivitamin and mineral formulas are contraindicated in pregnancy and lactation. Pregnant women should use a prenatal formula. Lactating women should use the Women'sMV formula unless advised otherwise by a physician. The dotFIT multivitamin and mineral formulas are contraindicated for those with hemochromatosis (an inherited disease that leads to iron-overload, affecting 0.5 percent of the population) because of the iron content, and for anyone suffering adverse reactions to any of the supplement’s ingredients. The vitamin E content in two tablets per day may be contraindicated for those individuals taking blood-thinning medication. In all cases, consult with a physician. Smokers should stay below 66,000 IU of beta-carotene daily (the multivitamin formula contains less than 15,000 IU) until a dose can be established for them.

Adverse Reactions

At the recommended doses adverse effects are highly unlikely.

Upper Limit/Toxicity

See Table 3 for a list of known ULs and LOAELs for nutrients in the dotFIT multivitamin and mineral formulas. No nutrient in these formulas is above the UL or LOAEL.
Table 3: Safe and Probable Optimal Range including Food Sources

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Low – High</th>
<th>Upper Limit (UL)</th>
<th>LOAEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-formed Vitamin A[1]</td>
<td>0 IU - 10,000 IU</td>
<td>10,000 IU (3000 mcg)</td>
<td>21,645 IU</td>
</tr>
<tr>
<td>Beta Carotene[2]</td>
<td>10,000 IU - 25,000 IU</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin D (D3)</td>
<td>400 IU – 1500 IU</td>
<td>2000 IU</td>
<td>3800 IU*</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>100 IU – 800 IU</td>
<td>1,500 IU (1000 mg)</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin K</td>
<td>60-120 mcg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>200 mg – 1000 mg</td>
<td>2,000 mg</td>
<td>3,000 mg</td>
</tr>
<tr>
<td>Vitamin B1</td>
<td>2 mg – 30 mg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin B2</td>
<td>5 mg – 30 mg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin B3 (niacinamide)</td>
<td>30 mg – 50 mg</td>
<td>35 mg</td>
<td>1000 mg</td>
</tr>
<tr>
<td>Vitamin B6</td>
<td>6 mg – 50 mg</td>
<td>100 mg</td>
<td>500 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>400 mcg – 900 mcg</td>
<td>1,000 mcg</td>
<td>5,000 mcg</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>6 mcg – 50 mcg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calcium5</td>
<td>1200 mg – 2000 mg</td>
<td>2,500 mg</td>
<td>5,000 mg</td>
</tr>
<tr>
<td>Magnesium5</td>
<td>420 mg – 600 mg</td>
<td>350 mg4</td>
<td>350 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>150 mcg - ?</td>
<td>1,100 mcg</td>
<td>1,700 mcg</td>
</tr>
<tr>
<td>Iron5</td>
<td>15 mg – 25 mg</td>
<td>45 mg</td>
<td>70 mg</td>
</tr>
<tr>
<td>Zinc[3]</td>
<td>15 mg – 30 mg</td>
<td>40 mg</td>
<td>60 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>2 mg – 4 mg</td>
<td>10 mg</td>
<td>-</td>
</tr>
<tr>
<td>Manganese</td>
<td>2 mg – 5 mg</td>
<td>11 mg</td>
<td>15 mg</td>
</tr>
<tr>
<td>Potassium</td>
<td>2000 mg - ?</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

1. Supplemental amount can be zero if daily intake of beta carotene is within the safe and optimal range. 2. Smokers, those likely to develop, or those that already have lung cancer, should avoid beta carotene supplementation. Currently being revisited. 3. Upper range amount is from supplements only. 4. From supplements only. 5. Supplemental amounts should be close to the low numbers shown.
ActiveMV™ Formula

The ActiveMV formula is a multipurpose multivitamin and mineral formula. At one pill daily, it is the basic multivitamin for everyone over 12 years of age. At two pills daily, it is designed for athletes and all others with an active lifestyle aged 18 to 65 (general population over age 50, see the Over50MV formula and women 18 to 50 years of age, see the Women'sMV formula) who consume the general variety of today’s typically available foods.

Rationale

Studies suggest that athletes require additional vitamins due to increased energy demands.21,71,72,73,74,75 Some, but not all, athletes consume more nutrients simply by eating more food. This assumes the athlete is on a relatively high-calorie, balanced diet thus able to consume enough nutritious food to match their energy expenditure. Athletes trying to lose weight/body fat or maintain low weight/fat represent a different category since they have increased requirements and a lower caloric intake, which can also lead to muscle loss as well as low nutrient intakes.76,77,78 As such, the B vitamins are higher in this formula. Additionally, the ActiveMV formula contains doses of antioxidants at the higher end of the optimal range.79 The ActiveMV dose for athletes is two pills daily, one in the morning with a meal and the other at night with a meal, to maintain the ideal nutrient levels in all tissues all day, every day.

Typical Use

- For all persons with an active lifestyle, 12-65 years of age, except those who are pregnant, trying to conceive or lactating
  - One tablet per day before or after main meal with a favorite beverage
- Active athletes and exercisers, two tablets per day before or after main meal with a favorite beverage

<table>
<thead>
<tr>
<th>Supplement Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Size: 1 Tablet</td>
</tr>
<tr>
<td>Amount Per Serving</td>
</tr>
<tr>
<td>Vitamin A (as Beta Carotene 4,000 IU and Acelate 500 IU)</td>
</tr>
<tr>
<td>Vitamin C (as Ascorbic acid)</td>
</tr>
<tr>
<td>Vitamin D (as Cholecalciferol)</td>
</tr>
<tr>
<td>Vitamin E (as D-Alpha Tocopheryl Succinate)</td>
</tr>
<tr>
<td>Vitamin K (as Phytomenadione)</td>
</tr>
<tr>
<td>Vitamin B1 (as Thiamine Mononitrate)</td>
</tr>
<tr>
<td>Vitamin B2 (as Riboflavin)</td>
</tr>
<tr>
<td>Vitamin B3 (as Nicotinamide)</td>
</tr>
<tr>
<td>Vitamin B6 (as Pyridoxine HCl)</td>
</tr>
<tr>
<td>Folic Acid</td>
</tr>
<tr>
<td>Vitamin B12 (as Cyanocobalamin)</td>
</tr>
<tr>
<td>Iron (as Ferrous Fumarate)</td>
</tr>
<tr>
<td>Iodine (as Iodine)</td>
</tr>
<tr>
<td>Copper (as Copper Gluconate)</td>
</tr>
<tr>
<td>Zinc (as Zinc Oxide)</td>
</tr>
<tr>
<td>Magnesium (as Magnesium Stearate)</td>
</tr>
<tr>
<td>Potassium (as Ascorbic acid)</td>
</tr>
<tr>
<td>Chromium (as Chromium Picolinate)</td>
</tr>
</tbody>
</table>

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
** % Daily Value not established.

*Other Ingredients: DL-Calcium Phosphate, Stearic acid (Vegetable source), HydroxyPropyl methylcellulose, Microcrystalline Cellulose, Magnesium Stearate (Vegetable source), Silicon Dioxide, Santhan gum.

Contains No: Dairy, Fish, Crustacean shellfish, Tree nuts, Peanuts, Soy or Gluten.
No Sugar, Salt, Starch, Yeast, Artificial flavors, Coloring or Preservatives added.
References


35 Clark LC; Combs GF Jr; Turnbull BW; Slate EH; Chalker DK; Chow J; Davis LS; Glover RA; Graham GF; Gross EG; Krongrad A; Lesher JL Jr; Park HK; Sanders BB Jr; Smith CL; Taylor JR. Effects of selenium supplementation for cancer prevention in patients with carcinoma of the skin: A randomized controlled trial. Nutritional Prevention of Cancer Study Group. JAMA 1996 Dec 25;276(24):1957-63.


67 Armas LAG, Hollis BW, Heaney RP. Vitamin D2 is much less effective than vitamin D3 in humans. J Clin Endocrinol Metab. 2004;89:5387-5391.
75 Manore MM. Dietary recommendations and athletic menstrual dysfunction. Sports Med.


Women’sMV™ Formula

The Women’sMV formula was created for women younger than 50 years of age who are not pregnant or trying to conceive.

Rationale

This formula was designed with the specific needs of females in mind by including slightly higher levels of magnesium, iron and folic acid and the proper extra nutrients for lactating women not needing the higher iron found in a prenatal formula.

Typical Use

- For use by women 13-50 years of age not using the ActiveMV™ formula
- Non-pregnant females not trying to conceive
- One tablet per day before or after main meal with a favorite beverage

---

**Supplement Facts**

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>% Daily Value**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vitamin A</strong> (as Beta Carotene)</td>
<td>6,000 IU</td>
</tr>
<tr>
<td><strong>Vitamin C</strong> (as Ascorbic acid)</td>
<td>300 mg</td>
</tr>
<tr>
<td><strong>Vitamin D</strong> (as Cholecalciferol)</td>
<td>1,000 IU</td>
</tr>
<tr>
<td><strong>Vitamin E</strong> (as DL-Alpha Tocopheryl Succinate)</td>
<td>15 IU</td>
</tr>
<tr>
<td><strong>Vitamin K1</strong> (as Phytonadione)</td>
<td>50 mcg</td>
</tr>
<tr>
<td><strong>Vitamin B3</strong> (as Thiamine Mononitrate)</td>
<td>6 mg</td>
</tr>
<tr>
<td><strong>Vitamin B2</strong> (as Riboflavin)</td>
<td>6 mg</td>
</tr>
<tr>
<td><strong>Vitamin B6</strong> (as Pyridoxine HCl)</td>
<td>9 mg</td>
</tr>
<tr>
<td><strong>Folic Acid</strong></td>
<td>400 mcg</td>
</tr>
<tr>
<td><strong>Vitamin B12</strong> (as cyanocobalamin)</td>
<td>12 mcg</td>
</tr>
<tr>
<td><strong>Biotin</strong></td>
<td>100 mcg</td>
</tr>
<tr>
<td><strong>Pantothenic Acid</strong> (as Calcium Pantothenate)</td>
<td>10 mg</td>
</tr>
<tr>
<td><strong>Iron</strong> (as Ferrous Fumarate)</td>
<td>10 mg</td>
</tr>
<tr>
<td><strong>Iodine</strong> (from Kelp)</td>
<td>100 mcg</td>
</tr>
<tr>
<td><strong>Magnesium</strong> (as Magnesium Oxide)</td>
<td>100 mg</td>
</tr>
<tr>
<td><strong>Zinc</strong> (as Zinc Citrate)</td>
<td>10 mg</td>
</tr>
<tr>
<td><strong>Selenium</strong> (as L-Selenomethionine)</td>
<td>50 mcg</td>
</tr>
<tr>
<td><strong>Copper</strong> (as Copper Picolinate)</td>
<td>50 mcg</td>
</tr>
</tbody>
</table>

**Notes:**<br>

- Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.<br>
- % Daily Value not established.

**Other Ingredients:**<br>
Dibasic Calcium Phosphate, Microcrystalline Cellulose, Stearic Acid, Croscarmellose Sodium, Silicon Dioxide, Magnesium Stearate.

Contains: No Dairy, Fish, Crustacean shellfish, Tree nuts, Peanuts, Soy or Glutens.<br>
No Sugar, Salt, Starch, Yeast, Artificial flavors, Coloring or Preservatives added.

Storage Conditions: Store in a cool, dry place.

---

**References**

Over50MV™ Formula
The Over50MV formula is for the general population over 50 years of age, and for athletes and intense exercisers over 65 years of age.

Rationale
This formula considers the requirements\(^1\) of older individuals in helping to combat potentially preventable diseases such as dementia, osteoporosis and heart disease.\(^4\) It contains optimal doses of Folate, B6 and B12\(^6\) along with bone-building nutrients such as Vitamin D, Vitamin A (also beta carotene) and even Vitamin K.\(^8\) This formula should be used with 1000 mg of calcium from food or supplements.

Typical Use
- For the general population over 50 years of age
- Individuals using ActiveMV formula would switch to the Over50MV formula at age 65
- One tablet per day before or after main meal with a favorite beverage

### Supplement Facts

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>% Daily Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A (as Beta Carotenes 5,000 IU and Acetate 1,000 IU)</td>
<td>6,000 IU</td>
</tr>
<tr>
<td>Vitamin C (as Ascorbic acid)</td>
<td>600 mg</td>
</tr>
<tr>
<td>Vitamin D (as Cholecalciferol)</td>
<td>1,000 IU</td>
</tr>
<tr>
<td>Vitamin E (as 2,6-di-terephthaloyl Sucroate)</td>
<td>50 IU</td>
</tr>
<tr>
<td>Vitamin K (as Phylloquione)</td>
<td>50 mcg</td>
</tr>
<tr>
<td>Vitamin B1 (as Thiamine Mononitrate)</td>
<td>6 mg</td>
</tr>
<tr>
<td>Vitamin B2 (as Riboflavin)</td>
<td>6 mg</td>
</tr>
<tr>
<td>Niacin (as Nicotinamide)</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin B6 (as Pyridoxine HCL)</td>
<td>10 mg</td>
</tr>
<tr>
<td>Folic Acid</td>
<td>400 mcg</td>
</tr>
<tr>
<td>Vitamin B12 (as Cyanocobalamin)</td>
<td>100 mcg</td>
</tr>
<tr>
<td>Iodine (from Kelp)</td>
<td>7 mg</td>
</tr>
<tr>
<td>Magnesium (as Magnesium Oxide)</td>
<td>100 mg</td>
</tr>
<tr>
<td>Zinc (as Zinc Citrate)</td>
<td>15 mg</td>
</tr>
<tr>
<td>Selenium (as Selenomethionine)</td>
<td>70 mcg</td>
</tr>
<tr>
<td>Copper (as Copper Gluconate)</td>
<td>1 mg</td>
</tr>
<tr>
<td>Chromium (as Chromium Picolinate)</td>
<td>100 mcg</td>
</tr>
</tbody>
</table>

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

** % Daily Value not established.

Other Ingredients: Microcrystalline Cellulose, Croscarmellose Sodium, Dibasic Calcium Phosphate, Stearic acid, Silicon Dioxide, Magnesium Stearate

Contains: No Dairy, Fish, Crustacean shellfish, Tree nuts, Peanuts, Soy or Gluten. No Sugar, Salt, Yeast, Artificial Flavors, Coloring or Preservatives added.

Storage Conditions: Store in a cool, dry place.

### References

6. Kimberly A Skarupski, Christine Tangney, Hong Li, Bichun Ouyang, Denis A Evans, and Martha Clare Morris Longitudinal association of vitamin B-6, folate, and vitamin B-12 with depressive symptoms among
**KidsMV™**

**Goal**
The goal of the KidsMV formula is to provide the nutrients a growing child needs and often does not get in sufficient amounts due to myriad factors such as poor food choices, lack of interest in certain foods or food groups and picky eating behavior. There are windows of opportunity for intellectual and physical growth from infancy through adolescence. A child whose diet is not nutritionally complete during these critical periods will not be able to compensate for the loss at another time.

**Rationale**
Children generally need more nutrient-dense foods in their diets due to smaller amounts of food consumed at meals. A child's diet may lack essential nutrients for a number of reasons. For example there are very few dietary sources of vitamin D other than fatty fish and liver, which are uncommon in a young child's diet. Not surprisingly, children tend to avoid nutritious foods. They commonly gravitate towards empty-calorie foods, such as cookies, crackers and candies. Eating this type of food generally depresses a child's appetite for healthier foods. Pediatricians may advise parents of poor eaters that their children will eat when they're hungry. This advice may alleviate a parent's concern, but it could result in an undernourished child. Children who do not receive proper levels of all nutrients do not have the potential to develop and function optimally. Although vitamin deficiency is uncommon in the United States, insufficiency or marginal deficiency is widespread which could have profound health consequences later in life. In fact recently, supplementation with multivitamins during the first years of life have been found to possibly reduce the risk of allergic disease at school age.

Children with substandard daily diets find it difficult to produce academic performance equal to their counterparts who consume diets that come closer to the suggested RDAs. In a well-designed study by Schoenthaler et al., children using a multivitamin and mineral supplement (MVM) who raised their nutrient intake to the equivalent of a well-balanced diet increased their I.Q. compared to the placebo group by an average of two-point-five points. In one-fifth of the participants, the MVM raised their I.Q. 16 points, presumably because this group of children ate a poorer diet. More recently, research suggests that MVM supplementation improves brain function (spatial working memory) in children.

A daily multivitamin and mineral formula helps children receive the nutrients their diet may lack. Giving a child a multivitamin does not decrease the importance of eating healthy foods and establishing good eating patterns, nor can a multivitamin and mineral formula replace the nutritional value of food, but it can supplement a diet lacking essential nutrients.

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A daily multivitamin and mineral formula helps children receive the nutrients their diet may lack. Giving a child a multivitamin does not decrease the importance of eating healthy foods and establishing good eating patterns, nor can a multivitamin and mineral formula replace the nutritional value of food, but it can supplement a diet lacking essential nutrients.

The American Academy of Pediatrics now recommends that infants, children and adolescents obtain 400 international units (IU) of vitamin D every day, which is double the previous recommendation. This guideline is based on recent evidence that children and adolescents may not be getting enough of this vitamin, and the occurrence of extreme vitamin D deficiency (rickets) among infants and adolescents in the United States is of particular concern. The safety of giving infants and children 400 IU of vitamin D per day has also been established and research indicates that getting enough calcium and vitamin D throughout childhood reduces the risk of osteoporosis and other diseases later in life.

**Typical Use**
- All children ages two to 11 unless a specific medical condition prohibits the proper intake of any nutrient contained in the formula
- Ages two to four take one daily
- Ages five to 11 take two daily
- Ages 12 to 17 use one adult ActiveMV™ multivitamin and mineral tablet
Precautions

The dotFIT KidsMV™ is considered safe for healthy users at the proper dosage. Given the ratio of risk to benefit, the long-term use of this formula is much safer than consuming the typical American diet without nutrient augmentation.²⁴,²⁷

Contraindications

The KidsMV is contraindicated for those with hemochromatosis because of the iron content. The KidsMV is also contraindicated for anyone suffering adverse reactions to any of its ingredients. Consult with a physician for drug/nutrient interactions.

Adverse Reactions

At the recommended dosages side effects would be highly unlikely.

Upper Limit/Toxicity

No nutrient in these formulas is above the UL or LOAEL for children.

Summary

Purpose

- Replaces all multivitamin and mineral formulas
- Specific formulas to complement an individual’s food intake in an attempt to satisfy nutritional requirements and increase cellular efficiency without adding calories
- Maintain a safe, optimal nutrient intake 24 hours per day
- Nutritional insurance from normal dietary shortcomings due to food preferences, nutrient availability and inability to define the perfect diet

Unique Features

- Formula and use follow strict and updated scientific research criteria for all youth ages
- Uniquely formulated to maintain a safe and optimal range of nutrients when combined with other dotFIT products
- The nutrients are in their proper forms, ratios and strengths to complement food intake and help maintain a safe and optimal range for 24 hours per day
- Manufactured in a FDA-registered facility, in compliance with Good Manufacturing Practices (GMPs) exclusively for dotFIT, LLC

Supplement Facts

| Vitamin A (as Beta Carotene 2,000 IU and Palmilate 500 IU) | 2,500 IU | 50% |
| Vitamin C (as Ascorbic acid) | 50 mg | 83% |
| Vitamin D (as Cholecalciferol) | 250 IU | 63% |
| Vitamin E (as D-Acetyl Tocopheryl Succinate) | 20 IU | 87% |
| Vitamin K (as Phytonadione) | 30 mcg | 38% |
| Vitamin B1 (as Thiamine Mononitrate) | 1 mg | 67% |
| Vitamin B2 (as Riboflavin) | 1 mg | 59% |
| Niacin (as Nicotinamide) | 6 mg | 30% |
| Vitamin B6 (as Pyridoxine HCl) | 1 mg | 50% |
| Folic Acid | 100 mcg | 25% |
| Vitamin B12 (as Cyanocobalamin) | 3 mcg | 60% |
| Biotin | 10 mcg | 3% |
| Panthenol (as Calcium Pantothenate) | 2 mg | 50% |
| Iron (as Ferrous Fumarate) | 5 mg | 28% |
| Iodine (from Kelp) | 50 mcg | 33% |
| Magnesium (as Magnesium Oxide) | 20 mg | 5% |
| Zinc (as Zinc Citrate) | 5 mg | 30% |
| Selenium (as L-Selenomethionine) | 20 mcg | 29% |

* % Daily Value not established.

Other Ingredients: Sucrose, Fructose, PureLo Natural Sweetener (Luo Han Guo fruit), Orange and Grape Colors and Flavors, [Orange; Natural Orange Flavor, Natural Color], Stearic acid (Vegetable source), Magnesium Stearate (Vegetable source), Silicon Dioxide.

Contains: No Dairy, Fish, Crustacean shellfish, Tree nuts, Peanuts, Soy or Gluten. No Salt, Starch, Flavoring or Preservatives added.
References


26 Holick MF. Vitamin D: Evolutionary, Physiological and Health Perspectives. Curr Drug Targets. 2010 Aug 27. [Epub ahead of print]
SuperCalcium+™

Goal

According to the National Center for Health Statistics (NCHS), most Americans do not meet the Adequate Intake Values of calcium\footnote{Reference 1} or the current higher recommendation of vitamin D. Female adolescents have the lowest intake overall.\footnote{Reference 2} Natural food sources of vitamin D are scarce, and dependence on the sun’s rays present several problems e.g. skin color, fears of skin cancer, sunburns, etc.\footnote{References 4, 5, 6, 7, 8} Less than adequate intake of these essential micronutrients may lead to osteoporosis.\footnote{References 9, 10} Hip fractures, falls in the elderly\footnote{Reference 11} and specific cancers.\footnote{References 12, 13} Supplementation of calcium in combination with vitamin D can supply the proper amounts of these essential nutrients to help prevent and/or slow the progression of these conditions.\footnote{References 14, 15, 16} The objective of Super Calcium+ is to supply the body with specific amounts of calcium carbonate\footnote{Reference 18} for maximum absorption along with vitamin D and magnesium for improved utilization in order to meet the body’s established needs that are generally not met through diet alone.

Rationale

**Calcium:** The skeletal system accounts for 20 percent of the adult human body’s weight and serves as a major reservoir for calcium. The adolescent years represent a critical period for bone mineral accrual with rapid gains occurring until age 16.\footnote{Reference 20} If one doesn’t maximize bone building during this period, equivalent increase cannot be made up for later in life making proper calcium intake of great importance. To make matters worse, as we age, the calcium content of bone begins to decline, increasing the likelihood of fractures. When this critical “breaking point” is reached, the condition is known as osteoporosis. This disease affects millions of Americans each year, causing approximately one-point-five million bone fractures (over 250,000 involve the hip) at a cost of $12-18 billion.\footnote{Reference 11} Fall-related injuries are a leading cause of morbidity and mortality in older adults.\footnote{Reference 10} Supplying adequate amounts of calcium as we age may minimize the loss of this important mineral and prevent loss of bone mass.\footnote{References 10, 11, 14} Besides its function in bone, calcium is required for such essential functions as nerve conduction, muscle contraction and blood clotting.\footnote{Reference 22} Properly prepared calcium carbonate has been shown to have superior absorption, especially with food.\footnote{Reference 18} It also has the highest content of calcium by weight (so less is needed) and its cost is less than other forms.\footnote{Reference 19} Additionally calcium carbonate is 40% calcium by weight while calcium citrate is only 21%.\footnote{References 23, 24}

**Vitamin D:** Recently there has been a steady stream of research on the benefits of vitamin D. Solid evidence shows that it is just as important as calcium in building and maintaining strong bones by increasing the absorption of calcium.\footnote{Reference 12} Many other tissues in the body have receptor sites for vitamin D, providing proof that it confers other important health benefits.\footnote{Reference 7} It plays a role in building muscle strength which may protect elderly people from falling and bone fractures.\footnote{References 26, 27, 28, 29, 30, 31} In 2005, it was concluded in the *American Journal of Public Health* that vitamin D substantially reduced the risk of for breast, colon, prostate, and ovarian cancer.\footnote{Reference 32}

**Calcium and Vitamin D:** Scientific research has found an inverse relationship between calcium and vitamin D intake and breast cancer in women.\footnote{References 23, 24, 35, 36} Calcium by itself may have a protective effect against colon cancer.\footnote{References 37, 38} Although the exact mechanism behind calcium and vitamin D’s cancer-fighting properties has yet to be discovered, it would be beneficial to maintain adequate levels of these two micronutrients. There should be no reason to take calcium by itself; it should always be accompanied with vitamin D.\footnote{References 29, 40}

The significant departure in adulthood from the use of dairy products (especially milk) and the warnings on sun exposure to all have significantly reduced the ability of the U.S. population to acquire adequate levels of calcium and vitamin D without supplementation.

**Magnesium:** Magnesium is necessary for the secretion of parathyroid hormone (PTH).\footnote{Reference 41} This hormone aids in calcium utilization.\footnote{Reference 41} The average American diet lacks magnesium; magnesium is therefore included in this formula.\footnote{Reference 42}

Given the overall positive findings, including the dramatically increased recommendations of vitamin D, maintaining adequate intakes of calcium and vitamin D throughout life may be a useful strategy for the
prevention and management of osteoporosis, bone fractures, falls in the elderly and specific cancers.

**Typical Use**

- Anyone not meeting the recommended intakes of calcium and vitamin D through diet or adequate sun exposure
- As a dietary supplement, take one or two tablets daily with meals to meet calcium and vitamin D requirements

**Precautions**

Chronic calcium supplementation is considered safe at doses up to 2500 mg/day. Currently the upper limit for vitamin D is 2000IU due to toxicities that can occur when taken in higher doses. Large doses of calcium and iron can compete for absorption, resulting in a slightly lower absorption of iron.

**Contraindications**

The use of calcium supplements by those with a history of kidney stones has varied results. Some individuals with a history of stones will benefit from the supplementation of calcium with food as it aids in the removal of oxalates. However, those with absorptive hypercalciuria may have an increased risk of stone formation. Consult with a physician when a history of kidney stones exists, or when taking these drugs: biphosphonates, hydrogen blockers, levothyroxine, proton pump inhibitors, quinolones and tetracyclines.

**Adverse Reactions**

Side effects from calcium supplementation are rare, mild, and usually limited to gas, bloating and constipation.

**Upper Limit/Toxicity**

The National Academy of Sciences (NAS) Food and Nutrition Board (FNB) has set the upper limit for chronic calcium ingestion at 2500 mg/day and vitamin D at 2000 IU/day. The Lowest Observed Adverse Effect Level (LOAEL) is 5000 mg/day for calcium and 3800 IU/day for vitamin D.

**Summary**

**Purpose**

- Based on the current scientific data, the formula, dotFIT Super Calcium+™ would be considered an ideal choice, especially when compared to other common calcium products that must compete on price rather than efficacy
- Super Calcium+ is one component in the dotFIT longevity program, which is made available to all program users and will appear on the website

**Unique Features**

- Contains calcium, magnesium and vitamin D, which have been shown to be crucial for proper calcium utilization
- Calcium and magnesium are prepared in their proper forms designed to optimize delivery and utilization
- This formula considers use of other dotFIT products in order to allow the user to maintain a safe and optimal range of total nutrient intake
- Manufactured in a FDA-registered facility, in compliance with Good Manufacturing Practices (GMPs) exclusively for dotFIT, LLC
Supplement Reference Guide
This information is educational material for dotFIT certified fitness professionals. This literature is not to be used to imply that dotFIT products may diagnose, treat, cure or prevent any disease.

Supplement Facts
Serving Size: 2 Tablets
Servings Per Container: 60

<table>
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<th>Amount Per Serving</th>
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<tr>
<td>Vitamin D (as Cholecalciferol)</td>
<td>400 IU</td>
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<tr>
<td>Calcium (as Carbonate)</td>
<td>1,000 mg</td>
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<tr>
<td>Magnesium (as Oxide)</td>
<td>500 mg</td>
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*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
** % Daily Value not established.

Other Ingredients: Hydroxypropyl Methylcellulose, Microcrystalline Cellulose, Stearic Acid (Vegetable Source), Magnesium Stearate (Vegetable Source)

Contains No: Dairy, Fish, Crustacean Shellfish, Tree Nuts, Peanuts, Soy or Gluten. No Sugar, Salt, Starch, Artificial coloring, Flavoring or Preservatives added.

Storage Conditions: Store in a cool, dry place.

WARNING: KEEP OUT OF REACH OF CHILDREN UNDER THE AGE OF 12.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

References

18 Heaney RP, Dowell MS, Barger-Lux MJ. Absorption of calcium as the carbonate and citrate salts, with some observations on method. Osteoporos Int. 1999;9:19-23.
38 Giovannucci E. Epidemiological evidence for vitamin D and colorectal cancer. J Bone Miner Res. 2007 Dec 22 Suppl 2:V81-5. Review.
39 Bolland MJ, Avenell A, Baron JA, Grey A, MacLennan GS, Gamble GD, Reid IR. Effect of calcium supple-
Superior Antioxidant™

Goal
Excess free radicals are caused by normal biological processes, exercise, and the environment and have been linked to the aging process. This formula is used to increase the intake of nutrients that have been shown to help contain free radical production. The goal of reducing free radicals is to stave off the cellular damage they cause and potentially reduce the risk of chronic or age-related diseases. This includes improving the maintenance of eye health, protecting against heart disease, cognitive decline and certain cancers.

Rationale

Carotenes: Four of the antioxidants in this formula belong to a class of compounds called carotenes. Carotenes are plant pigments that result in the yellow, orange and red colors of fruits and vegetables. Only 34 of the 600 known carotenoids have been found in human serum. Several carotenoids can be converted by the body to vitamin A. These carotenoids, ß-carotene, alpha-carotene and ß-cryptoxanthin are called provitamin A carotenoids. Carotenoids that do not convert to vitamin A, such as lutein, lycopene and zeaxanthin, are called non-provitamin A carotenoids. These six carotenoids are the most abundant in the American diet. Carotenoid absorption requires the presence of fat in a meal. As little as three to five grams of fat in a meal appears sufficient to ensure carotenoid absorption. Because they do not need to be released from the plant matrix, carotenoids supplements are more efficiently absorbed than carotenoids in foods. Carotenoids facilitate intercellular communication by increasing the expression of the gene encoding a connexin protein. This type of intercellular communication is important for maintaining cells in a differentiated state and is often lost in cancer cells. Recently, high circulating levels of carotenoids have demonstrated an inverse relationship with cardiovascular disease and specifically hypertension.

Alpha-Carotene: Alpha-carotene is a fat-soluble compound present in cell membranes. It has the ability to quench singlet oxygen and other free radicals. Recently, the intake of alpha-carotene has been associated with a lower risk for breast and lung cancers and may offer protection against colorectal and prostate cancers and ischemic stroke. Alpha-carotene can also inhibit the oxidation of fats (lipid peroxidation) under certain conditions.

Lutein/Zeaxanthin: Lutein and Zeaxanthin are similar structures. The difference lies in the orientation of a single bond, making them geometric isomers. They are the only carotenoids found in the human eye, predominately in the macula of the retina. The macula is responsible for central vision and acuity. Both compounds serve as blue light and near-ultraviolet radiation filters, protecting underlying ocular tissues from damage. Both lutein and zeaxanthin effectively quench free radicals.

Clinical trials clearly show that supplementation with lutein and/or zeaxanthin increases macular pigmentation. Lutein and zeaxanthin may protect against eye diseases such as cataract formation and age-related macular degeneration (AMD), the leading cause of vision loss in the United States.

Lycopene: Lycopene is the most effective carotenoid at quenching the free radical singlet oxygen. Lycopene gives tomatoes their red color. Lycopene is more bioavailable from processed tomato products such as ketchup, tomato juice and pizza sauce than the fresh, whole food. The intake of lycopene is associated with a significantly lower risk for prostate cancer, a leading cause of cancer death in the United States. Lycopene may also protect against heart disease and other cancers. The intake of lycopene from supplements increases the level of lycopene in humans.

Conclusions from a growing collection of placebo-controlled trials suggest that consumption of lycopene (either as a dietary supplement or in the form of processed tomatoes) can reduce DNA damage and may have beneficial effects on prostate cancer.

Coenzyme Q-10: Coenzyme Q-10 (CoQ-10) is part of the ubiquinone family and is involved in energy production in the electron transport chain. It is a fat-soluble substance, providing protection for cell
membranes against oxidation. CoQ-10 also prevents the oxidation of LDL cholesterol, which is thought to contribute to the formation of atherosclerosis. In humans, CoQ-10 levels decrease with age. Therefore, presumably because of CoQ-10’s essential role as an electron carrier in mitochondrial oxidative phosphorylation, supplementation with CoQ-10 and other antioxidants has recently been shown to increase the elasticity of large and small arteries thus further demonstrating that CoQ-10 may support cardiovascular health. Recent research shows that CoQ-10 has the ability to reduce fatigue in endurance activity as well as reduce markers of muscle damage from intense exercise.

**Alpha-Lipoic Acid:** Alpha-lipoic acid is a part of energy producing cycles (enzyme systems) in the body and is a “universal antioxidant.” It scavenges the major free radicals: hydrogen peroxide, singlet oxygen, hydroxyl radical, nitric oxide radical, hypochlorous acid, and peroxynitrite. It can also regenerate other antioxidants (vitamins C and E) in the body. It is therefore protective against oxidative damage and may play a role in disease prevention. Alpha-lipoic acid is being extensively researched for several disease states including diabetic peripheral neuropathy, heart disease, obesity-related disease, and memory loss reduction.

**Optiberry® Mix:** OptiBerry is a standardized, multiple berry anthocyanin extract formulated and tested for optimum safety, bioavailability, antioxidant and anti-angiogenic (the ability to reduce unwanted growth of blood vessels, which may lead to varicose veins and tumor formation) activity. Lutein, Zeaxanthin and berry extracts are used in the Age-Related Eye Disease Study (AREDS) formula, which is the only formula shown effective at helping prevent age-related macular degeneration (AMD). OptiBerry® contains a unique, proprietary blend of wild blueberry, strawberry, cranberry, wild bilberry, elderberry and raspberry extracts (patent-pending), which are known for their health-promoting properties due to their high content of anthocyanins. Anthocyanins also help maintain DNA integrity, serve as anti-inflammatory and antimitagenic agents, and provide cardioprotection by maintaining vascular permeability. OptiBerry® is the result of extensive scientific research, which methodically evaluated key functional parameters, including ORAC (antioxidant activity), VEGF (anti-angiogenic activity), bioavailability and safety of numerous individual berry extracts.

**Typical Use**
- Everyone, exercisers and non-exercisers, interested in reducing the ravages of free radical damage and optimal health and functioning and reducing the risk of chronic disease such as cancers and heart disease
- Intense exercisers to reduce the increased free radical production and damage associated with intense and prolonged training bouts
- One softgel per day before or after main meal with a favorite beverage
- Can be combined with a dotFIT® multivitamin

**Precautions**
The SuperiorAntioxidant™ is considered safe for the general population at the proper dosage in healthy users. Given the ratio of risk to benefit, the long-term use of a dotFIT multivitamin with the SuperiorAntioxidant is much safer than consuming the typical American diet without nutrient augmentation.

**CoQ10:** Consult a physician if taking warfarin and/or other blood thinning medications. Individuals with cancer should consult their physician before taking the SuperiorAntioxidant formula as high dosages of CoQ-10 decrease the effectiveness of radiation therapy in mice. CoQ-10 has been thought to alter glycemic control and insulin requirements in diabetic individuals; however, CoQ-10 supplementation does not appear to alter glycemic control or insulin requirements. In either case, diabetics should consult their physician before using the SuperiorAntioxidant.

**Alpha-lipoic acid:** Has been well-tolerated in clinical studies lasting from four months to two years at the suggested dose of one to three tablets per day (200 to 600 mg/day). Studies of lipoic acid supplementation in people with conditions like Type II diabetes and peripheral arterial disease have reported potential minor side effects such as tingling in legs and feet and mild stomach queasiness. However, it was difficult to know if this was caused by the supplement or the condition.
Contraindications
The dotFIT SuperiorAntioxidant™ formula is contraindicated in pregnancy and lactation and for anyone suffering adverse reactions to any of the ingredients. Pregnant or lactating females should use only a prenatal multivitamin-and-mineral formula.

Adverse Reactions
There should be no serious side effects in healthy users at the recommended doses.

Alpha-lipoic acid: Side effects are usually not seen unless dosage exceeds 600 mg/day. Reported reactions include headache, skin rash and stomach upset.

Lutein/zeaxanthin: None reported.

Lycopene: None reported.

CoQ-10: Symptoms of gastrointestinal distress have been reported with dosages of 200 mg or more, which is unlikely to occur at the present dose of 30 mg/day.

Upper Limit/Toxicity
The National Academy of Sciences has not set an upper limit (UL) for any of the ingredients contained in the dotFIT SuperiorAntioxidant formula.

Alpha-lipoic acid: No upper limit has been established for human use. A two-year study of laboratory rats reported a no-observed-adverse-effect level (NOAEL) of 60 mg per kilogram body weight. The dose in the dotFIT SuperiorAntioxidant is less than one-tenth of this dose.

Lutein/zeaxanthin: UL data is not available at this time. Human clinical trials have used doses up to 40 mg/day without any adverse or toxicological effects. An upper limit has yet to be established.

Lycopene: There have been no reports of adverse or toxicological effects with doses as high as 150 mg/day. An upper limit has yet to be established.

CoQ-10: Evidence from randomized human clinical trials indicates that the UL for CoQ-10 is 1200 mg. There have been no reports of toxicity in studies lasting up to 30 months.

OptiBerry®: Acute oral LD (50) of OptiBerry® was greater than 5 g/kg in rats. No human data is available at this time.

Summary
Purpose

• Intense, prolonged exercise, normal biological processes, etc., can increase free radical production and damage. The goal of the SuperiorAntioxidant™ is to reduce free radical damage and optimize health and functioning while reducing the risk of certain chronic diseases such as brain, eye and heart disease
• A complement to the dotFIT multivitamin and mineral formulas
• The SuperiorAntioxidant is one component of the dotFIT longevity program which is made available to all program users and appears on the website

Unique Features

• Contains only the most effective researched antioxidants in their proper amounts
• Accurately complements the dotFIT multivitamin formulas
• Softgel preparation for improved absorption of COQ-10, mixed carotenoids, lutein & zeaxanthin
• Uses the OptiBerry® blend which is clinically proven to have superior antioxidant activity
• This formula considers use of other dotFIT products to help maintain a safe and optimal range of total nutrient intake
• Manufactured in a FDA-registered facility, in compliance with Good Manufacturing Practices (GMPs) exclusively for dotFIT, LLC

**Supplement Facts**

<table>
<thead>
<tr>
<th>Serving Size: 1 Softgel</th>
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<tbody>
<tr>
<td><strong>Amount Per Serving</strong></td>
<td>% Daily Value</td>
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</table>
| Alpha Lipoic Acid      | 200 mg  
| Co-Enzyme Q10 (CoQ10) | 800 mg  
| Optiberry (from wild blueberry, strawberry, cranberry, wild bilberry, elderberry, raspberry) | 30 mg  
| Lycopene               | 10 mg   
| Lutein                 | 6 mg    
| Zeaxanthin             | 4 mg    
| D. Salinae naturae mixed carotenioids | 1.5 mg  

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs. **% Daily Value not established.

**Other Ingredients:** Soybean oil, Gelatin, Yellow #5, Leucithin, Carrot color, Titanium Dioxide, Silicon Dioxide

Contains No: Dairy, Rish, Crustacean shellfish, Tree nuts, Peanuts, or Gluten, No Sugar, Salt, Starch, Yeast, Artificial flavors, Coloring or Preservatives added.

OptiBerry® is a registered trademark of InterHealth N.I. OptiBerry® brand anthocyanin extract (patent pending).

**Storage Conditions:** Store in a cool, dry place.

**References**

30 Hadley CW, Clinton SK, Schwartz SJ. The consumption on processed tomato products enhances plasma Lycopene concentrations in association with a reduced lipoprotein sensitivity to oxidative damage. J Nutr 2003 Mar;133(3):727-32.
B. Arnesen H, Nenster MS. Peroxidation of LDL from combined hyperlipidemic male smokers supplied with-3 fatty acids and antioxidants. Arterioscler Thromb Vasc Biol 1997;17:2576-88


Joint Flex Plus™ (BioCell Collagen II)

Goal
Osteoarthritis (OA) is a condition of degeneration of the protective covering at bone articular surfaces (cartilage). Age and injury are associated with an increased risk of development, with other lifestyle factors intervening (such as obesity). Because cartilage is used as a cushion between bone joints, its loss causes friction, pain and stiffness.

BioCell Collagen II is a patented dietary supplement containing low molecular weight undenatured type II collagen combined with hyaluronic acid (HA) and chondroitin sulfate (CS).

Type II collagen and collagen fragments (as found in Joint Flexibility Plus formula) may act as signals to increase cartilage synthesis as well as provide lubrication to improve/maintain healthy joint tissue and function.

Rationale
Type II Collagen
The role of articular cartilage is to bear load, absorb shock and minimize wear between articulating joint surfaces. Chondrocytes, the cells of articular cartilage, do not directly contribute to these physical properties; only the extracellular matrix (ECM) plays a direct structural role. However, as the only cell type normally resident within articular cartilage, chondrocytes are responsible for the synthesis and maintenance of a viable extracellular matrix which is suitably adapted to cope with the physical pressures of its environment.

The health of articular cartilage, then, is dependent upon the maintenance of the ECM. The ECM is a macromolecular framework made of two main components, proteoglycans and collagens. Type II collagen is the predominant type in cartilage. Type II collagen forms a 3D fibrous network which provides tensile stiffness and strength to cartilage and provides the basic architecture to the tissue. Aggrecans (and other types of proteoglycans) are embedded within this fibrous network, providing compressibility and elasticity to the tissue.

Chondrocytes are responsible for the synthesis, organization and maintenance of the ECM. Communication between chondrocytes and the ECM determine degradation or synthesis. OA can alter the sensitivity of chondrocytes to regulatory signals. This leads to a progressive imbalance between degradation and synthesis/regeneration, leading to a marked decrease in the content of type II collagen in the ECM, eventually leading to cartilage damage. Type II collagen and collagen fragments are proposed to regulate metabolic activities in chondrocytes.

The theory behind supplementation is the role that collagen fragments have in regulating chondrocyte activity. The presence of collagen fragments (hydrolyzed) gives the appearance that ECM degradation has occurred. This stimulates the chondrocytes to increase ECM synthesis, in an attempt to “repair” the damaged structure. Several studies featuring in vitro and in vivo design have shown significant improvement in the ECM as well as standard tests to assess pain, physical activity and quality of life in both animal and human models.

Animal studies in rats showed reduced articular cartilage degradation in an OA model with oral supplementation of chicken collagen type II. Obese-arthritic dogs given 4mg or 40mg doses of UC II (undenatured type II collagen from chicken sternum) for 90 days showed significant reductions in overall pain, pain during limb manipulation and lameness after physical activity. There was a dose dependant response. Additionally, after a 30-day withdrawal, all animals experienced a relapse and increases in pain measures.

In 2002, researchers in Germany explored the effect of type II collagen biosynthesis by bovine chondrocytes when cultured with different types and MW of collagen (type I and II hydrolyzed, type I and
II native and collagen free wheat protein). Their results indicated a stimulatory effect on type II collagen biosynthesis and secretion by chondrocytes when cultured with hydrolyzed collagen, in a dose dependent manner. The researchers found that only hydrolyzed collagen, and primarily of lower MW (<10 kDa) was able to exert this influence. This illuminated a possible feedback mechanism for the regulation of collagen turnover in cartilage. A study in 2003 also showed that type II collagen increased the ECM content, as well as subtle differences in biochemical markers.

In 2000, Moskowitz reviewed the results of studies using collagen hydrolysates in the US, United Kingdom and Germany. A significant impact on pain measures was noted; see Figure 1 and Figure 2. As with the GAIT study, the benefits seem to be greatest in those who suffer OA to a greater degree.

![Figure 1 WOMAC scores were reduced by 33% in the UC-II group vs. 14% with GS (UC-II = BioCell Collagen II). The WOMAC* (Western Ontario and McMaster Universities) Index of Osteoarthritis](image1)

![Figure 2 VAS scores were decreased by 40% for UC-II vs. 15% for GS (UC-II = BioCell Collagen II). The VAS** (Visual Analogue Scale) Index of Osteoarthritis.](image2)

*The WOMAC index is used to assess patients with osteoarthritis of the hip or knee using 24
parameters. It can be used to monitor the course of the disease or to determine the effectiveness of anti-rheumatic medications. In this study the WOMAC score measured the difficulty in physical function, stiffness and pain in the knee.

A 2004 abstract looked at the efficacy of BioCell collagen specifically. In this RDBPCT, 16 subjects with OA of the knee or hand used BioCell 1000mg BID for two months. Adverse events were the same as placebo and were insignificant and not related to the study substances. The BioCell group experienced significant improvement in all WOMAC subscales and in total WOMAC score compared to placebo.6

In 2009, a clinical trial was presented that looked not only at the effectiveness of undenatured type II collagen (UC-II) on OA pain, but also compared it to glucosamine and chondroitin (GC) use. A daily dose of 40mg of UC-II was used, providing 10mg of bioactive undenatured type II collagen. WOMAC scores were reduced by 33% in the UC-II vs 14% with GC. VAS scores were decreased by 40% for UC-II vs 15% for GC. The Lequesne Score (used to determine the effect on pain during daily activities) was reduced by 20.1% for UC-II vs 5.9% for GC. Overall, the UC-II group experienced significant reductions in all measures of pain and pain during activities and did so to a significantly greater degree than GC supplementation.7

Additionally, there are several studies that have looked at the effects of UC-II on rheumatoid arthritis (RA), an autoimmune disorder. Results are promising and may be to an auto-antigen action, suppressing T-cell activity and autoimmune responses.8

Ultimately, it appears that oral administration of UC-II is effective and appears to follow a dose response to symptoms of OA. The proposed mechanism of action is through increases undenatured type II collagen in the ECM signaling type II collagen synthesis by chondrocytes, leading to a more advantageous ECM environment—one that favors a better ratio of synthesis vs degradation.

**A Visual Analogue Scale (VAS) is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured. An example of a VAS would be a numeric scale of 1 to 10 to represent severity of pain (1 being little to no pain and 10 representing excruciating pain).

**Hyaluronic Acid**

Hyaluronic acid (HA) is an anionic, non-sulfated glycosaminoglycan distributed widely throughout connective tissues and is one of the chief components of the extracellular matrix. It is a major component of the synovial fluid and contributes to the viscosity of the fluid. Along with lubricin, it is one of the fluid’s main lubricating components.

HA is an important component of articular cartilage, where it is present as a coat around chondrocytes. When aggregan monomers bind to hyaluronan in the presence of link protein, large highly negatively charged aggregates form. These aggregates wick water and are responsible for the resilience of cartilage (its resistance to compression). In OA or joint degradation, HA levels are decreased.

The proposed mechanism of action would be to support a healthy ECM and provide the raw materials for joint health as well as bringing water to cartilage and aid in synovial fluid viscosity and protection/reaction to pressure and shock.9 Intra-articular injections with HA are quite common and have repeatedly shown improvement in symptoms of OA and joint degeneration. Effective absorption and uptake by oral supplementation of high MW hyaluronic acid has been shown in rats and dogs.10

**Chondroitin Sulfate**

It is a necessary substrate for cartilage metabolism and assists in maintaining joint viscosity. In vitro studies show that chondroitin also inhibits enzymes that degrade cartilage. In recent reviews of chondroitin, the researchers concluded: the safety and tolerability of CS are confirmed, CS is effective, at least in part, for the treatment of OA and its therapeutic benefits occur through three main mechanisms: 1) stimulation
of ECM production by chondrocytes; 2) suppression of inflammatory mediators; and 3) inhibition of cartilage degeneration. Its effects include benefits that are not achieved by current medicines and include chondroprotection and the prevention of joint space narrowing.1,12

**Latest 80 Patient Human Clinical Trial Confirms Earlier Results Demonstrating the Safety and Efficacy of BioCell Collagen II in Supporting OA-Associated Joint Conditions**

On September 13, 2010, Newport Beach, CA, BioCell Technology, LLC, announced the completion of the largest human study to date of BioCell Collagen II in subjects suffering from joint conditions associated with OA (osteoarthritis). This multi-center, double-blind, placebo-controlled trial has demonstrated the safety and efficacy of BioCell Collagen II in addressing the disease symptoms and in improving various physical activities, as measured by VAS and WOMAC scores.

As mentioned above, the previous 16 patient study of BioCell Collagen II had demonstrated a similar safety profile and statistically significant efficacy in supporting chronic degenerative joint conditions in patients with OA. The recently completed study enrolled 80 patients to strengthen the statistical force behind the earlier finding. In addition, the current study investigated the effect of BioCell Collagen II for a longer term than the previous one. This has made possible various statistical analyses, one of whose key findings was that a significant portion of OA patients experienced highly substantial improvement of their joint conditions. The details of this study are expected to be published in the near future.

Additionally in 2010, BioCell Technology, LLC, received Generally Recognized As Safe (GRAS) approval by an independent expert panel for its patented, clinically-substantiated ingredient, BioCell Collagen II®.

**Summary**

**Purpose**

Joint Flex Plus is a safe alternative to the more dangerous NSAIDS for the treatment of mild to moderate osteoarthritis and should be a strong consideration to those that suffer from OA. JFP would be targeted to those older adults who experience mild to severe joint pain due to the loss of cartilage that leads to OA.

- Joint Flex Plus is one component of the dotFIT longevity program which is made available to all program users and appears on the dotFIT website.
- Studies show that the ingredients in the new JFP may provide greater relief than glucosamine and chondroitin combined.
- The ingredients in Joint Flex Plus have been shown to support cartilage, joint and skin health.
- They have been clinically proven to be more than twice as effective as GS & CS in patients with moderate to severe osteoarthritis.
- Reduces symptoms of joint pain and increases functional capacity without the side effects of NSAIDS.

**Unique Features**

- Contains the patented formula BioCell Collagen II
- Contains no other added ingredients so you may take other products (multivitamin, antioxidant) without worrying about reaching excessive nutrient levels that may be detrimental over time
- Dosages and compounds are in the amounts used in research that have shown to improve mobility, joint comfort, and knee-joint strength
- Formula considers use of other dotFIT products to help the user maintain a safe and optimal range of total nutrient intake
- Manufactured in an FDA-registered facility, in compliance with Good Manufacturing Practices (GMP's)
Typical Use

- Individuals concerned with joint and cartilage health
- For overuse or age-related joint discomfort
- Take 1 capsule in the morning and 1 capsule at night before a meal with least 8 oz. of water.
- For optimal results, take 2 capsules in the morning and 2 capsules at night before a meal or as directed by your health care professional.

Precautions

The ingredients in the Joint Flex Plus are generally considered to be safe at the recommended dose.

Contraindications

The use of JFP is not recommended during pregnancy or lactation due to the absence of use data for these populations. No known contraindications exist at this time.

Adverse Reactions

Study participants who used BioCell 1000mg BID for two months experienced adverse events the same as placebo and were insignificant and not related to the study substances. No adverse events were reported in the literature for the other substances.

Upper Limit/Toxicity

There are no known overdoses of the BioCell ingredients either individually or as the formula.

### Supplement Facts

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<td>Chondroitin Sulfate</td>
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<td>Hyaluronic Acid (HA)</td>
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*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
**% Daily Value not established.

Other Ingredients: Kosher Gelatin (capsule), Rice powder, and Magnesium stearate.

Contains: No: Shellfish (crustacea), Fish, Dairy, Tree nuts, Peanuts, Soy or Gluten. No Sugar, Salt, Starch, Artificial colors, Flavoring, Sulphites, MSG (monosodium glutamate) or Preservatives added. Free of Titanium dioxide.
References

SuperOmega-3

Goal

Fish oils are fats found in fish (e.g. mackerel, lake trout, herring, sardines, albacore tuna and salmon), which are a rich source of long-chain polyunsaturated fatty acids (LCPUFA), better known as omega-3 (n-3 or w-3) fatty acids (FA). The two most studied n-3 fatty acids are the 20-carbon eicosapentaenoic acid (EPA) and the 22-carbon docosahexaenoic acid (DHA).

Due to current dietary habits, the median intake of n-3 fatty acids EPA and DHA for Americans is approximately 128 mg/day, well below any level of benefit.\textsuperscript{1,2} National Health and Nutrition Examination Survey (NHANES) data from 1999-2000 reveals that fish intake is approximately three ounces per week and, moreover, from seafood not high in n-3 fatty acids.\textsuperscript{3} The goal of this product is to provide a source of these important fatty acids in a mercury-free, easy-to-ingest form. The formula will also supply the appropriate amounts that have demonstrated myriad health benefits related to heart and brain function for those who do not or cannot consume diets containing these heart healthy nutrients e.g. specific oily fishes and certain plant foods.

Rationale

Heart Disease (high blood pressure, hyperlipidemia and cardiac arrhythmias)

These fatty acids have been shown in numerous studies to lower elevated triglyceride levels.\textsuperscript{4,5,6,7} The triglyceride-lowering effect of EPA and DHA appears to result from the combined effects of inhibition of lipogenesis,\textsuperscript{9,10} faster clearance of chylomicrons\textsuperscript{11} and stimulation of fatty acid oxidation in liver.\textsuperscript{12,13}

Eicosanoids are bioactive molecules that have various roles in inflammation, regulation of blood pressure,\textsuperscript{14} blood clotting, and immune system modulation. They are derived mostly from the w-6 fatty acids, arachidonic acid.

A diet high in n-6 fatty acids leads to an increase in prothrombotic and proinflammatory prostaglandins thus increasing the risk of hyperlipidemia, cardiovascular disease and Type II diabetes.\textsuperscript{15,16,17,18}

Ingestion of DHA and EPA partially replace the n-6 fatty in the cell membranes (i.e. red blood cells, liver cells and specific leukocytes), thus reducing prostaglandin E2, thromboxane A2 (potent platelet aggregator and vasoconstrictor), and formation of leukotriene B4, an inducer of inflammation and a powerful inducer of leukocyte chemotaxis and adherence. Concurrently there is an increased concentration of prostacyclin PGI3 without decreasing PGI2. Both PGI2 and PGI3 are active vasodilators and inhibitors of platelet aggregation.\textsuperscript{15,16,17} This may explain EPA and DHA's positive effects on hyperlipidemia, coronary artery disease progression and blood pressure.\textsuperscript{14,21}

Although scientific studies have produced mixed results regarding higher intakes of n-3 FA and reductions in non-fatal myocardial infarction, the anti-arrhythmic effect is well-established\textsuperscript{22,23,24,25,26,27}

Based on animal models and in vitro studies, EPA and DHA exert their effects on heart cells by inhibiting fast, voltage-dependent sodium and calcium currents. This is especially promising in possibly reducing arrhythmias and fibrillation (e.g. sudden cardiac death) in those who have suffered a myocardial infarction (such as a heart attack).\textsuperscript{25,26}

A recent published review concluded that there is extensive evidence from three decades of research that fish oils, or more specifically the omega-3 polyunsaturated fatty acids (PUFAs) contained in them, are beneficial for everyone.\textsuperscript{28} This includes healthy people as a supplement for disease prevention as well as those with heart disease — including postmyocardial infarction (MI) patients and those with heart failure, atherosclerosis, or atrial fibrillation.

Inflammation

As stated earlier, inflammatory and immune cells are sensitive to change according to the ratio of n-3 and n-6 fatty acids in one's diet.\textsuperscript{29} Several other anti-inflammatory effects of DHA and EPA might be explained by competitively inhibiting cyclooxygenase-2 (COX-2), lipoxygenase-5 (LOX-5), interleukin (IL)-
Ia and tumor necrosis factor-alpha (TNF-a), enzymes involved in inflammation and cartilage degradation,29,30,31 Therefore, the n-3 fatty acids, EPA and DHA, may possess anti-inflammatory activity, reducing rheumatoid arthritis32 and other arthritic conditions. Unlike non-steroidal anti-inflammatory drugs (NSAIDs) which can reduce inflammation on-demand, fish oil supplementation is not associated with gastrointestinal distress and does not increase cardiovascular risk.30

**Age-related Macular Degeneration (AMD)**

AMD is the leading cause of blindness.21 DHA is a key essential fatty acid found in the retina33,34,35 and is involved in visual development.34 Photoreceptor outer segments in the eyes are constantly being renewed which may require a steady supply of DHA to maintain proper functioning.25 Blockage of the blood vessels that supply the retina contributes to AMD. The beneficial effects of n-3 fatty acids on the retina may be due to DHA and EPA’s antithrombotic and hypolipidemic effects.25,37 Epidemiological studies have suggested that the n-3 fatty acids, DHA and EPA, may be protective against AMD.25,37,38

In fact, a recent 12-year study demonstrated that participants who reported the highest omega-3 FA intake were 30% less likely than their peers to develop central geographic atrophy (CGA) and neovascular (NV) AMD.39

**Cognitive Function**

Because DHA is integral to the maintenance of the cell membranes in the brain and important to the overall central nervous system function, regular consumption of n-3 FA is believed to dramatically reduce the risk of dementia,40 thus preserving cognitive function in the aging population and contributing to mood improvement.41,42,43,44,45 Recent studies also have concluded that fish oil consumption can also boost memory for healthy adults,46 once again demonstrating that in order for health or disease prevention benefits from omega-3 FAs to be maximized, regular intake should begin early in life.

**Development and behavior of children**

Deficiencies and imbalances of omega-3 FAs, not only during the developmental phase but throughout the whole life span, have significant effects on brain function. Numerous observational studies have shown a link between childhood developmental disorders and fatty acid imbalances. For instance, neurocognitive disorders such as attention-deficit hyperactivity disorder (ADHD), dyslexia, dyspraxia and autism spectrum disorders are often associated with a relative lack of omega-3 fatty acids.47,48 Additionally, DHA supplementation of infant formula has been shown to improve visual acuity in newborns.49

**Body Composition**

The results of a recent double blind study showed that 6 weeks of supplemental fish oil significantly increased lean mass, and significantly reduced fat mass in healthy adults.50 This is in agreement with Couet et al.,51 observing a significant 0.88 kg reduction in fat mass, and a non significant 0.20 kg increase in lean mass following 3 weeks of an increased consumption of fish oil. In their study, they added fish oil to the diet, but kept total fat and energy constant between the treatments. In this most recent study, the fish oil was added on top of an ad libitum diet, with directions given to the subjects to maintain their normal dietary patterns throughout the study.

Similarly, Hill et al.52 found a significant reduction in fat mass following 12 weeks of supplementation with fish oil in overweight subjects. They also observed a non-significant increase in lean mass. Thorsdottir et al.53 recently found that supplementation with fish oil, or inclusion of fish in an energy-restricted diet resulted in significantly greater weight loss in young men. They also found that young men taking the fish oil supplements had a significantly greater reduction in waist circumference compared to the control group, or the group that increased their dietary intake of fish.

When diet lacks the DHA and EPA content that has demonstrated the above protective qualities, an n-3 FA supplement would be prudent in order to help preserve overall health.

***Typical Use***

To maintain cardiac and brain health, take one or two softgels with any meal.
Precautions

Fish oil supplements should be used by children, pregnant women and nursing mothers only if recommended and monitored by a physician. Because of the possible anti-thrombotic effect of fish oil supplements, hemophiliacs and those taking warfarin (Coumadin) should exercise caution in their use.24,25 Fish oil supplements should be stopped before any surgical procedure. Conflicting results have been reported regarding the effects of fish oil supplements on glycemic control in those with glucose intolerance including Type II diabetics.21,54 Some early studies indicated that fish oil supplements might have detrimental effects in those groups. Recently, better designed studies have not reported these adverse effects; in fact studies are now suggesting benefits for diabetics.19 There is no evidence that fish oil supplements have detrimental effects on glucose tolerance, insulin secretion or insulin resistance in non-diabetic subjects. Diabetics should discuss the use of these supplements with their physicians and note if the supplements affect their glycemic control. Diabetics who take fish oil supplements should be monitored by their physicians.

Contraindications

- Anyone taking greater than three grams per day should do so only under the care of their physician due to risk of excessive bleeding at higher doses21
- Should not be used if user is on anticoagulants or has uncontrolled hypertension54,55
- May raise blood sugar and LDL in people with diabetes21

Adverse Reactions

Fish oil supplementation is usually well-tolerated at three to four grams per day. Those side effects that have been reported include mild gastrointestinal upsets such as nausea and diarrhea, halitosis, eructation (belching) and “fishy” smelling breath, skin and even urine.21 Taking greater than three grams per day of n-3 fatty acids can cause excessive bleeding.21

Upper Limit/Toxicity

The US Food and Drug Administration has set the “Generally Regarded as Safe (GRAS)” level for n-3 fatty acids at three grams per day.19

Summary

Purpose

Omega-3 FAs are uncommon in the American diet yet are shown to have greater potential than most other nutrients in maintaining good health. Additionally, it is well known that there is an increasing shortage of the fish that are the best sources of these omega-3 FA, making supplements an important consideration.

- Cardiovascular (CV) disease is the number one killer in the US and regular consumption of omega-3 FAs has the ability to reduce negative CV incidences
- Omega-3 FA supplementation would be targeted to all adults (over 18) who do not receive one to two grams per day of the omega-3 FAs EPA & DHA (equivalent to two to four servings of fatty fish/weekly) as a potential natural preventative aid in age-related cognitive decline and prevention of CV disease
- Recommended as part of the dotFIT longevity program
- It has been demonstrated that supplemental fish oil can deliver the same benefits as the oil in fish59,60,61

Unique Features

- dotFIT’s SuperOmega-3 fish oil complex provides maximum potencies of two key essential fatty acids, EPA and DHA
- Each softgel delivers 60% EPA and 40% DHA—double the potency of typical fish oil products
- To maximize the body’s absorption of omega-3 essential fatty acids, each softgel is uniquely enteric-coated to withstand stomach acid and dissolve in the small intestine. The result is maximum absorption and no “fishy repeat” or “fish burps”
• dotFIT’s SuperOmega-3 fish oil complex is mercury-free and contains no PCBs
• This formula considers use of other dotFIT products to help the user maintain a safe and optimal range of total nutrient intake
• Manufactured in a FDA-registered facility, in compliance with Good Manufacturing Practices (GMPs) exclusively for dotFIT, LLC

## Supplement Facts

| Serving Size: 1 Softgel | Servings Per Container: 30 | Calories: 16 | Fat Cal: 12 |

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*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

** % Daily Value not established.

Other Ingredients: Gelatin, Glycerin, Water (Purified), Mehlhainsylic Acid, Copolymer of Tricelins IFFC.

Contains No: Dairy, Crustacean shellfish, Tree nuts, Peanuts, Soy or Glutens, No Sugar Salt, Starch, Waste, Artificial flavors, Coloring or Preservatives added.

Components in this product are derived from natural sources.

Purified tested for pesticides, herbicides, PCBs and disolutes as well as heavy metals such as mercury.

This fish oil was processed using molecular distillation to ensure purity.

## References


37 Johnson EJ, Schaefier EJ. Potential role of dietary n-3 fatty acids in the prevention of dementia and


56 Borkman M, Chisholm DJ, Furler SM, et al. Effects of fish oil supplementation on glucose and lipid me-
This information is educational material for dotFIT certified fitness professionals. This literature is not to be used to imply that dotFIT products may diagnose, treat, cure or prevent any disease.


Advanced Brain Health™

Goal

Until late in the 20th century, the basic theory was that we enter adult life with a set number of brain cells that deteriorate gradually until brain function falls apart. During the past 10 years, neuroscientists have proved that this does not need to be the case. The brain does continue to form new connections and to make changes in response to new demands. Like most every other part of the body, the brain is a “use it or lose it” organ. Despite this new knowledge, it is common for people to experience overall decline in brain function with age. This tendency may be influenced by reduced use of the brain and by limitations in brain nutrition.

Several substances are showing the potential to support brain function and to slow (and possibly stop or reverse) age-related decline in mental function. Among these substances, phosphatidylserine (PS), acetyl-L-carnitine (ALC), alpha-lipoic acid (ALA), and vitamin B-12 have been found to offer support to the maintenance of aging brain function. Following the middle-age years, supplementation with these compounds may balance a decline in the body’s production or absorption of these substances that are essential for normal brain and neurological function.

Rationale

Phosphatidylserine (PS): PS is a natural compound produced in the body and obtained in small amounts in some foods. PS is a special fat-like molecule that is called a phospholipid. It functions as a major component of cell and mitochondrial membranes. PS is thought to be especially important for the normal function of nerve and brain cells. PS is the major type of phospholipid in the brain and is known to contribute to several essential components of brain cell function. Many animal studies have demonstrated enhanced mental function from providing supplemental PS to older animals. Similarly, several human studies have found that PS supplementation benefited mental functions in older people suffering from various degrees and types of dementia. Since PS is present in virtually all cells in the body, it is not surprising that PS supplementation is being studied for its likely benefits to many functions of the body. A recent study involving 131 participants concluded that supplementing PS with DHA from fish oils significantly improved cognitive performance compared to placebo users in non-demented elderly with memory complaints. Once again these results support the use of supplementing BEFORE disease takes hold with the goal of staving off age-related declines due to chronic lack of proper brain nutrition.

Acetyl-L-Carnitine (ALC): ALC is a specific form of carnitine that is used for a variety of functions in many types of cells, including brain cells. As well as being central to energy production in brain cells, ALC has been shown to be a powerful antioxidant in stressed brain tissues. ALC is synthesized naturally in the body; however, ALC levels may decline in older adults. Common foods such as red meats and milk products contain natural L-carnitine in modest amounts, but these amounts may not make up for the decline observed with aging. One theory of brain aging is based on observations that the energy generating components (mitochondria) in brain cells suffer increased amounts of oxidative damage with age. The acetyl form of L-carnitine has been found to enhance mitochondrial function and to prevent brain mitochondrial decay and decline in mental function in aging animals. Several human studies have demonstrated a wide variety of potential benefits to brain and nerve function. Clinical trials have tested ALC supplementation in older people, showing benefits in the treatment of a variety of mental problems. In a 2003 meta-analysis by Montgomery et al. that examined double blind placebo-controlled trials of at least 3 months’ duration, ALC showed significant benefit over placebo. Because of ALC qualities as a neuro/cyto protective agent, it continues to be aggressively studied for maintaining and improving brain health.

Several studies have combined supplementation of ALC with alpha lipoic acid, resulting in a potentially enhanced beneficial effect on aging brain mitochondrial function (see next section).

Alpha Lipoic Acid (ALA): Due to its essential functions, lipoic acid was initially thought to be a B-vitamin. It was soon realized that it is not a vitamin since the body can synthesize it. Despite its non-
vitamin status, lipoic acid continues to be the subject of extensive research more than 50 years after its discovery. Much of the interest focuses on lipoic acid’s central role in energy metabolism and in its ability to function as an antioxidant and free radical scavenger in mitochondria. Although ALA is produced naturally in the cells of humans and animals, there is evidence that boosting ALA levels through supplementation can benefit nerve and brain function in older animals. Human studies of supplementation with ALA have focused primarily on its possible role in the treatment of those with age-related problems in brain function. Studies are needed to confirm that similar supplementation can slow age-related cognitive decline, but animal studies show that benefits are promising.

Vitamin B-12: Among other functions, vitamin B-12 provides essential support for the maintenance of neural tissues, including neural tissues of the brain. Some studies have reported that as many as one out of seven people over the age of 65 develop B12 deficiency due to a declining capacity to absorb the vitamin from foods. This deficiency was especially prevalent in non-supplement users. A deficiency may take years to develop, but a long-standing deficiency can result in permanent damage to neural tissues if diagnosis and treatment are delayed. A recent study showed that higher total intakes, which included supplementation, of vitamins B-6 and B-12 were associated with a decreased likelihood of incident depression for up to 12 years of follow-up, after adjustment for age, sex, race, education, income, and antidepressant medication use. For example, each 10 additional milligrams of vitamin B-6 and 10 additional micrograms of vitamin B-12 were associated with 2% lower odds of depressive symptoms per year. It has also been suggested that marginal deficiencies (i.e. not shown to be deficient by clinical testing) may lead to future brain health problems. Consequently, prophylactic supplementation with vitamin B12 has been suggested as a reasonable precaution to protect vitamin B12 status in older adults with a suggested dose ranging from six to 300 mcg/day.

Typical Use
Suitable for adults age 45 and older interested in supporting brain and nerve function during aging.

- One to three tablets per day with food
- Typical dosage based on age:
  - 45-55 years – one per day
  - 56-65 years – two per day
  - Over 65 years – three per day

Precautions
Advanced Brain Health is considered safe for the general population at the proper dosage in healthy users. Advanced Brain Health is designed to be safe to use along with any other dotFIT additional brain support elements that complement those already present in the dotFIT multivitamin formulas as well as the SuperiorAntioxidant and SuperOmega-3 formulas. Like any dietary supplement, users should consult with their physician and/or pharmacist before taking this supplement, especially if they are also taking any drugs for medical purposes.

Phosphatidylserine is generally well-tolerated when taken at the suggested levels of one to three tablets per day (100 to 300 mg/day). Phosphatidylserine in Advanced Brain Health comes from soybean sources, removing concerns about any risk associated with bovine sources that were commonly used in the early research on the substance. Uncommon side effects of phosphatidylserine include gastrointestinal upset and insomnia.

Acetyl-L-carnitine is typically well-tolerated when taken at the suggested dose of one to three tablets per day (350 to 1050 mg/day). Rare side effects have included nausea, gastrointestinal upset, and restlessness.

Alpha lipoic acid has been well-tolerated in clinical studies lasting from four months to two years at the suggested dose of one to three tablets per day (200 to 600 mg/day). Studies of lipoic acid supplementation in people with conditions like Type II diabetes and peripheral arterial disease have reported
potential minor side effects such as tingling in legs and feet and mild stomach queasiness. However, it was difficult to know if this was caused by the supplement or the condition.61

**Vitamin B-12** is very safe when taken at the dosage in this formula. Since toxicity from vitamin B12 is virtually unknown, no tolerable upper intake level has been established for vitamin B12 by the Institute of Medicine.62

**Contraindications**

The dotFIT Advanced Brain Health formula is contraindicated in pregnancy and lactation and for anyone suffering adverse reactions to any of the ingredients.

**Adverse Reactions**

There should be no serious side effects in healthy users at the recommended doses.

- Phosphatidylserine: Uncommon side effects include gastrointestinal upset (300 mg/day or more) and insomnia (600 mg/day or more).54,55
- Acetyl-L-carnitine: Side effects uncommon; those reported include gastrointestinal upset and agitation.54,57,63
- Alpha-lipoic acid: Side effects are usually not seen unless dosage exceeds 600 mg/day. Reported reactions include headache, skin rash and stomach upset.41,44
- Vitamin B12: Side effects unknown.

**Upper Limit/Toxicity**

The Institute of Medicine has not set an upper limit (UL) for any of the ingredients contained in the dotFIT Advanced Brain Health formula.

- **Phosphatidylserine**: No upper limit has been established for human use. A 12-week study of people over 57 years of age concluded that PS is a safe supplement for elderly individuals at doses up to 600 mg per day (taken in doses of 200 mg three times daily).65
- **Acetyl-L-Carnitine**: A recent risk assessment for L-carnitine established an “Upper Level for Supplements” (ULS) for L-carnitine at 2000 mg per day which is equivalent to about 3000 mg of acetyl-L-carnitine.66
- **Alpha-lipoic acid**: No upper limit has been established for human use. A two-year study of laboratory rats reported a no-observed-adverse-effect level (NOAEL) of 60 mg per kilogram body weight.67 The dose in the dotFIT Advanced Brain Health formula is less than 1/10 of this dose.
- **Vitamin B12**: No specific levels of intake are known to be toxic. Some theoretical concern has been expressed for excessively high intakes for extended periods of time. Carmel R. Efficacy and safety of fortification and supplementation with vitamin B12: biochemical and physiological effects.68

**Summary**

**Purpose**

- The goal of the Advanced Brain Health formula is to provide substances that help to support brain function and slow age-related decline in mental functions
- Complement to the dotFIT multivitamin and mineral, Superior Antioxidant, and SuperOmega-3 formulas
• The Advanced Brain Health formula rounds out the dotFIT longevity program by providing brain support compounds that add to and extend upon the important brain nutrients and protective components already present in the dotFIT multivitamin, antioxidant, and Omega-3 supplements

Unique Features
• Contains only well-researched brain support substances in their proper amounts
• Accurately complements the dotFIT multivitamin, antioxidant, and Omega-3 formulas
• This formula considers use of other dotFIT products to help the user maintain a safe and optimal range of total nutrient intake
• Manufactured in a FDA-registered facility, in compliance with Good Manufacturing Practices (GMPs) exclusively for dotFIT, LLC

Supplement Facts

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<td>Alpha Lipoic Acid</td>
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*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
** % Daily Value not established.

Other Ingredients: Gelatin, Magnesium Stearate, Microcrystalline Cellulose, Titanium Dioxide.

Contains No: Dairy, Fish, Crustacean shellfish, Tree nuts, Peanuts, Soy or Gluten, No Sugar, Salt, Starch, Yeast, Artificial flavors, or Preservatives added.

References


34 Bolognesi ML, Minarini A, Tumiatti V, Melchiorre C. Lipoic acid, a lead structure for multi-target-
weight loss dotFIT

The goal of supplements in this category is to assist the user in complying with the daily routine that leads to weight reduction by acting in one or more of the following ways:

- Help create and maintain a calorie deficit by increasing daily calorie expenditure when compared to a non-supplemented state
- Raise energy levels that may make one more active throughout the day
- Reduce the drive to consume food
- Decrease calorie absorption

The dieter would cease supplementation once the weight goal is reached or when they have their daily routines under control to continue making progress without supplements.
LeanMR™ Balanced Nutrition Shake

Goal
The purpose of the LeanMR formula is to support body fat/weight reduction by delivering better, satisfying nutrition in fewer calories.

LeanMR was designed to provide maximum support for lean body mass (LBM), a steady supply of energy, and optimal fullness (satiety) within the least amount of calories in order to improve the dieting experience and accelerate results.

With only 180-190 calories per serving, LeanMR provides
- 20 grams of the highest-quality protein, whey protein isolate to support the preservation or increase of LBM while decreasing body fat
- The perfect dose and blend of necessary fats including Conjugated Linoleic Acid (Tonalin®) to support the special needs and appetites of active individuals during dieting
- 19.5 grams of a Sustained Release Patented Carbohydrate Blend with 6-7 grams of fiber (Fibersol-2® and Glucomannan) and no sugar to deliver immediate and long-lasting energy and fullness

Rationale

LeanMR Drink Mix for Weight Control

In all studies meal replacements (MR) have been shown to be an extremely effective aid to weight reduction1,2,3,4 and in almost all cases more effective than conventional methods of dietary restrictions.5,6,7,8 (see Figure 6.) Additionally MR have been shown to be just as effective as dietary restriction combined with pharmacological therapy.9

And most importantly, continuous use of MR may be the most effective means of all treatments when it comes to maintaining weight loss.1,10,11,12 (See Figure 7.)

MRs are generally used to replace one or two meals a day and allow freedom of choice for the remaining allotted foods/calories.

Meal replacements allow
- Portion control: people generally attempt to consume meals to completion,13,14 therefore meal portion size significantly impacts a person’s total calorie intake.13,15 Overwhelming evidence validates that the smaller the portions, the fewer daily calories consumed11 and vice-versa. In other words, people tend to “eat with their eyes not their stomachs”. Use of portion-controlled meals has proven to yield greater weight loss than conventional diet therapy alone.16,17,18,19
- Accurate calorie counts of total daily food intake when compared to having to estimate the calories of self-prepared or unmarked meals.20
- Satiety (fullness): use of a properly formulated MR such as the LeanMR mix allows the user to increase the frequency of daily meals while managing calories. This in turn satisfies appetite and maintains greater daily energy levels i.e. more nutrition and fullness with fewer calories, and often a significant savings in groceries. Proper use throughout the day can deliver good nutrition while helping to save calories, allowing the user to partake in larger meals or favorite foods at desired times (e.g. higher calorie lunches and/or dinners).
- Higher protein-to-calorie ratio: helps protect lean body mass while dieting, which is otherwise lost when consuming only a restricted conventional diet.2,1

Sustained-Release Carbohydrate with Fibersol® Blend
The combination of Rice Oligodextrins (low glycemic carbohydrate source), Palatinose™ (generic name Isomaltulose), Glucomannan (a soluble fiber) and Fibersol-2™ (functional soluble fiber) allow for users of the LeanMR mix to experience even and prolonged energy levels and greater satiety.
Palatinose™ is a low glycemic functional carbohydrate that delivers prolonged energy due to its unique structure and low insulinemic response. With its slow but complete absorption, Palatinose provides constant and extended streams of energy for muscles and brain. This new energy source lasts over a longer period of time when compared to quickly absorbed carbohydrates.21

Fibersol-2™ is a soluble fiber and is included in this formula to deliver dietary fiber’s well known positive impact on health and weight control/appetite. Fiber is extremely important in a weight control program because it produces the feeling of fullness sooner and longer when added to a meal.22 Fibersol-2, a digestive resistant maltodextrin, is a soluble fiber that doesn’t act like one. Fibersol-2 doesn’t affect taste or interfere with mineral or calcium absorption, traits that are common among other fibers. Because Fibersol-2 is fermented slowly; it produces less acid and gas than most soluble fibers. All these traits make Fibersol-2 the perfect fiber to add to the diet and therefore are included in the LeanMR mix. The user receives the benefits of a “better fiber” in a convenient delivery system without fiber’s sometimes less desirable effects (taste, gas, bloating, etc.). Studies have shown Fibersol-2 to improve bowel regularity,24 exert a positive effect on blood glucose,25 lower cholesterol and serum triglycerides,25 increase probiotic levels (feed good bacteria) and help keep the digestive tract clean and healthy.24 Additionally Fibersol-2 has been approved as GRAS (generally regarded as safe) status by the Food and Drug Administration (FDA).

Glucomannan is a soluble fiber added to Lean Mix because it has been clinically shown to beneficially affect total cholesterol, LDL cholesterol, body weight and fasting blood glucose.27 Glucomannan continues to be used within fiber mixtures successfully in clinical trials related to improved weight loss, satiety and decreases in LDL-cholesterol.28,29,30

Healthy Dietary Fat Blend

The LeanMR mix includes a combination of important fats for added satiety and health maintenance including Conjugated Linoleic Acid (CLA) supplied by Tonalin®.31 CLA has demonstrated numerous potential health benefits and regular dosages have been shown to exert modest but positive effects on body composition.32

Figure 6: In all six studies the groups that were using meal replacements (PMR) as part of their overall calorie intake lost significantly more weight than the reduced calorie diet (RCD) group.1

Figure 7: In a 1-year follow-up in the groups that were tracked, the subjects still using meal replacements maintained significantly more weight loss than the RCD group.1
Summary

Purpose

The LeanMR™ mix is to be used primarily as a satisfying and healthy meal replacement that supports body fat/weight loss goals to a better extent than competitive products. It delivers high satiety and nutrition in fewer calories:

- A healthy, convenient food replacement designed to be integrated into daily meal planning in order to assist the user in reaching and maintaining weight control and health goals
- Supply nutrient-rich, convenient snacks between meals to boost energy, curb hunger and assist in weight control by controlling calories
- Also can be used for “snacking”, which may decrease the amount of food consumed in the subsequent meal or keep one from making an inappropriate food choice (e.g. high-calorie meal driven by an uncontrolled craving) as often happens when extra hungry and especially during weight loss

Unique Features

- Contains the highest quality whey protein – high protein product
- Proprietary blend of carbohydrates, including functional fibers, deliver a “better lasting” energy and satiety to support aggressive weight loss goals
- Contains NO ASPARTAME, no sugar and relatively LOW sodium
- Eight grams of fiber (24-28% of daily needs) for satiety and health (including helping to maintain the integrity of the digestive track and bowel regularity)
- Healthy blend of essential fats including CLA
- Designed in a synergistic relationship with all dotFIT products and a person’s traditional food intake. It is NOT spiked with unnecessary nutrients. Most other products in this space (e.g. bars, shakes, etc.) are heavily spiked with many nutrients, leading to undesirable levels within the body when combining multiple manufacturers, products and normal food intake
- When consuming only dotFIT products as directed with one’s normal daily food intake, the recipient is assured of keeping the body at a safe and optimal nutrient level
- Formulated and manufactured for great taste and pleasing texture in a FDA-registered facility in compliance with Good Manufacturing Practices (GMPs) and maintains rigorous product testing, exclusively for dotFIT, LLC

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DIRECTIONS:
Add two (2) scoops (51 g) of powder to at least one cup of cold water or cold coffee (increase or decrease the amount of liquid to achieve desired consistency). Shake, stir or blend until dissolved. Add crushed ice and/or your favorite fruit (count your calories) for a thicker, tastier shake.

Meal replacements such as the LeanMR™ have demonstrated positive results in weight control studies when used to replace one or two meals a day, allowing freedom of choice for the remaining allotted calories.

Allergen Statement: Contains Milk and Soy. Produced in a facility that also processes egg, soy and shellfish.

** % Daily Value not established.

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References

5 Ashley JM, St Jeor ST, Perumean-Chaney S, Schrage J, Bovee V. Meal replacements in weight intervention. Obes Res. 2001 Nov;9 Suppl 4:312S-320S.
13 Levitsky DA, Youn T. The more food young adults are served, the more they overeat. J Nutr 2004 Oct;134(10):2546-9.
nutrition dotFIT™ Sport and Fitness Foods

Overview

The purpose of the nutrition dotFIT line (including shake mixes) is to accomplish two important health, sport and fitness goals: 1) satisfy and complement the evolving change in society’s eating patterns by supplying great tasting meals and snacks – i.e. deliver better, satisfying nutrition with fewer calories; 2) these same foods/mixes, because of the unique formulations, will also be able to deliver the perfect ingredients to serve as the pre- and post-exercise/activity supplement that has been proven necessary to enhance training induced results.

The multiple uses/goals of the nutrition dotFIT assortment are the following:

• Weight control1,2,3,4,5,6,7,8,9,10
• Daily menu incorporation as a meal substitute to reduce or increase daily caloric intake11,12,13,14
• Snack between meals as an energy boost or hunger killer15
• Pre- and post-exercise/activity energy and recovery supplement
• Guiltless dessert

Rationale (see individual product descriptions & references for more information)

Weight control

It has been well established that successful dieters, weight loss maintainers, athletes and others able to control a healthy weight regularly incorporate meal replacement/substitute type foods1,2,8,9,10,13,14,16,17 (see Figures 1 & 2), including energy bars or snacks, meal replacements or “protein shakes”, etc. into their daily meal plans for the following reasons:

• More for less: using nutrition dotFIT products allows you to increase the frequency of daily meals while managing calories in order to satisfy appetite and maintain greater daily energy levels – i.e. more nutrition18 and fullness with fewer calories and often a significant savings in groceries. Proper use throughout the day can deliver sound nutrition while helping to save calories, allowing you to partake in larger meals/favorite foods for desired times (e.g. higher calorie lunches and/or dinners)
• Proper use allows more accurate calorie counts of total daily food intake when compared to having to estimate the calories of self-prepared or unmarked meals19
• Products in the nutrition dotFIT category offer helpful portion control: people generally attempt to consume meals to completion; therefore meal portion size significantly impacts a person’s total calorie intake. Overwhelming evidence validates that the smaller the portions, the fewer daily calories consumed20,21,22 and vice-versa i.e. people tend to “eat with their eyes not their stomachs”12,13,14,23
• A healthy, lower calorie alternative to traditional fast foods
• Convenient storage anywhere and faster than stopping and picking up generally less healthy, higher calorie traditional fast foods

Figure 1: In all six studies the groups using meal replacements (PMR) as part of their overall calorie intake lost significantly more weight than the reduced calorie diet (RCD) group.1
Daily menu incorporation as a meal substitute to reduce or increase daily caloric intake

Products in the nutrition dotFIT category can satisfy the criteria for smaller meals or be a balanced addition to increase meal size:

- Reduced meal size: busy people often need quick nutrition that can satisfy nutritional needs and deliver energy while keeping calories within a range that allows a healthy weight. Multiple, large, daily meals are not needed for most people today because of low activity in the workplace and during leisure time (sedentary entertainment). And because of the continuous need to sit so we can be transported by vehicles in order to sit somewhere else. Therefore, nutrition dotFIT products can supply an adequate caloric meal as a part of one’s overall daily meal planning

- Increase meal size or calorie intake: when weight/muscle gain is the goal and it becomes difficult to increase the consumption of traditional foods in order to continue to add lean body mass (LBM), nutrition dotFIT products offer the ideal solution. Easy/convenient to consume preparations can be added to any meal or daily menu plan to deliver exactly what's needed so surplus nutrients/calories are incorporated into muscle tissues rather than body fat when appropriate resistance exercise is included.

Snack between meals as an energy boost or hunger killer

Convenient for snacking to deliver quick energy or to take the edge off hunger without running up the calories. When hunger “nags”, nutrition dotFIT products can satisfy the desire to snack on less healthy or poorly satiating foods. Using these products for snacking may also decrease the amount of food consumed in the subsequent meal or keep you from making an inappropriate food choice (e.g. decadent high calorie meal driven by an uncontrolled craving) as often happens when extra hungry and especially during weight loss.

Pre- and post-exercise/activity energy and recovery supplement

Because of the length of time it takes to digest and absorb the nutrients from traditional meals, whole/traditional food meals cannot deliver the required nutrients within a timeframe that allows maximum results induced by exercise when compared to the proper use of quick digesting specialized formulas.

All proteins sticks, bars, cookies, and shakes meet the necessary “quick digestion”, carbohydrate and protein content criteria that have been shown to deliver an increase in energy, maximize recovery and increase muscular development when consumed before and after exercise. Although dotFIT liquid pre- and post-feedings (mixes or ready-to-drinks) have the fastest absorption time, when they are not an option based on venue or preference, all other nutrition dotFIT products make a convenient and effective alternative when attempting to maximize the training induced “windows of growth”.

Metabolic windows of growth

Immediately following exercise, muscle cell nutrient uptake is at its highest point of the day and therefore
this “window of opportunity” requires a well-designed, fast-acting formula.26,31

Virtually all studies have demonstrated that the inclusion of “immediate” pre- & post-training fast-acting carbohydrate/sugars and protein feedings can stimulate muscle protein synthesis (MPS)29,34,35,36,37 and reduce muscle damage to a far greater extent than normal meals/feeding patterns.26,29,33 In other words, no matter how well you eat throughout the day, you recover faster and build more muscle and strength by including these quickly absorbed pre- and post-exercise formulas (see Figure 3).27,29,36 Simply put, the post exercise feeding activates the muscle building that takes place during this period — and without it there is little to no protein synthesis during this timeframe.

We also recently discovered that although the post-training metabolic window is active for as much as 60-90 minutes, its maximum activity (greatest nutrient uptake and protein synthesis capabilities) takes place immediately at the end of the training session.27,30,37 From that point on, the longer you wait to supply the proper nutrients or the more time they take to get to the affected tissues, the less muscle building or recovery takes place during this period and can’t be made up for at any other point in time.

![Figure 3: Training results from 23 experienced recreational bodybuilders resistance training for 10 weeks with all things (diet, supplements, training, etc.) equal except the addition of pre/post feedings yielded significantly greater gains in body mass, LBM, strength and reduction in fat mass for the pre/post feeding subjects.27]

**The proper pre/post formula**

There is no longer a debate whether pre- and post-workout feedings enhance exercise-induced results. Volumes of peer review literature and studies continue to not only validate this now established fact, but also document the proper formulas.39,40,41

The formulas used in scientific studies are all relatively the same: within the range of 1.5-4 parts carbohydrate (CHO) to 1 part protein and low to no fat. The CHO range is based on the activity being studied – the longer the workout the higher the carbohydrate/sugar content. This formula produces the desired results i.e. quick, lasting energy, faster recovery and more muscle and strength gains from the workout.

The carbohydrate mixture must contain the proper amounts of simple, fast-acting sugars because the sugars/energy must enter the body quickly or the product loses effectiveness.26,42,43 All formulas include complexes that contain glucose polymers in order to deliver immediate and consistent energy.25,26,43,44 The formulas need to contain the right of amount of amino and fatty acids, which besides their role in muscle building, are also instrumental in managing the speed at which the carbohydrates continue to enter the body,45 allowing the recipient higher but consistent energy levels throughout the desired period.

By consuming the same ingredients (as the post-workout formula) before the workout, we not only improve the user’s training energy levels, we can also enhance the recovery and muscle-building process to a greater extent than solely ingesting the post-workout formula.
Although recovery primarily takes place after the workout, you can help speed and enhance the process before you start exercise by ingesting the formula 10-40 minutes before the workout (always make sure your pre-training, full food meal is eaten 2-3 hours before exercise unless you train first thing in the morning and time does not permit). Proper carbohydrate/sugar content is important because it stimulates insulin production and insulin is our body’s most anabolic hormone thus “king” when it comes to building muscle.46-47 Not only does this hormone start and continue the entire muscle-building process, but insulin also helps minimize the damage caused by exercise.46,47,48 Insulin blunts the exercise-induced production of the catabolic hormone cortisol, which “tears down” muscle tissue. Increasing insulin levels at proper times allows the body to spend more incoming nutrients and time building muscles rather than using everything to simply repair muscle.29,47,48 By ingesting the right drink pre-exercise, carbohydrates (CHO) not only supply workout energy but also kick-off the necessary insulin release that will work to mitigate the exercise-induced damage. When you repeat the process immediately post-workout, you quickly restore energy (glycogen) while stimulating a renewed insulin release, which initiates and enhances the muscle-building hormone process/cascade thus recovery and results.

Recently pre- and post-workout feedings of carbohydrate and protein have also demonstrated the abilities to reduce delayed onset of muscle soreness (DOMS),29,34,49 improve competitive performance,28,37,49 enhance immune function by decreasing exercise induced neutrophil degranulation,32 speed the recovery of neuromuscular functions after heavy training33 and increase the cell signaling related to protein synthesis,37 all compared to placebo and/or no immediate pre- and post-exercise/training feedings.

**Guiltless dessert**

All nutrition dotFIT products can serve as great tasting, healthy low-calorie desserts and can satisfy any “sweet tooth”.

Products in the nutrition dotFIT category have wonderful flavors and textures with the macronutrient blend (protein, fat and carbohydrate ratios) designed to satisfy the appetite for far fewer calories than it would normally take using traditional desserts.

**Typical Use**

Use as needed to satisfy any of the stated goals:

- Weight control for portion control and accurate calorie counts
- Daily menu incorporation as a meal substitute to reduce or increase daily caloric intake
- Snack between meals as an energy boost or hunger killer
- Pre- and post-exercise/activity energy and recovery supplement
- Guiltless dessert

**Summary**

**Purpose**

- Products in the nutrition dotFIT category supply nutrient-rich, convenient between-meal snacks to boost energy, curb hunger and assist in weight control
- Can also be used to increase daily caloric intake when unable to do so by consuming whole food
- Pre- and post-workout snack to enhance energy and recovery
- Can be used during training
- Can be used as a guiltless dessert
- A healthy, convenient food assortment designed to be integrated into your daily meal planning in order to assist you in reaching and maintaining your sport and fitness goals. All products in the nutrition dotFIT line can be selected based on taste, preference, venue, size and shape or calorie requirements for any of the above goals.

**Unique Features**

- Products in the nutrition dotFIT category are designed in a synergistic relationship with all dotFIT products and a person’s traditional food intake. These products are NOT spiked with unnecessary nutrients. Most other products in this space (e.g. bars, shakes, ready to drinks, etc.) are heavily
spiked with nutrients that can lead to undesirable levels within the body when combining multiple manufacturers, products and normal food intake. When consuming only dotFIT products as directed with one’s normal daily food intake, the recipient is assured of keeping the body at a safe and optimal nutrient level

- A good source of calcium and fiber
- An excellent source of protein
- Formulated and manufactured for great taste and pleasing texture, all nutrition dotFIT products meet or exceed the FDA’s guideline for “High Protein” and foods are microwaveable
- Bars, protein sticks, cookies, etc., are handmade and baked with high quality ingredients
- Third-party testing: Commitment to producing world-class products is our #1 priority. Rigorous testing, both in-house and through third-party FDA approved laboratories, assures that all nutritional claims meet or surpass FDA guidelines, USDA guidelines, and industry norms

References


20 Levitsky DA, Yoon T. The more food young adults are served, the more they overeat. J Nutr. 2004 Oct;134(10):2546-9.
Ready-to-Eat Bars and Baked Goods

Positioning
A healthy convenient food assortment designed to be integrated into your daily meal planning in order to assist you in reaching and maintaining your sport and fitness goals. All products in the nutrition dotFIT line can be selected based on taste, preference, venue, size and shape or calorie requirements for any of the typical uses listed below.

Products in this line include dotSTICK high protein sticks, dotTREAT high protein cookies, dotBAR breakfast bars, and dotBAR meal replacement bars. Available flavors may vary.

Unique features
- Contains multiple high quality protein sources
- Products in the nutrition dotFIT category are designed in a synergistic relationship with all dotFIT products and a person’s traditional food intake. These products are NOT spiked with unnecessary nutrients. Most other products in this space (e.g. bars, shakes, ready to drinks, etc.) are heavily spiked with many nutrients that can lead to undesirable levels within the body when combining multiple manufacturers, products and normal food intake. Because of our product synergy, use of our complete product line promotes safe and optimal daily nutrient intake
- Formulated and manufactured for great taste and pleasing texture, all products in the nutrition dotFIT category meet or exceed the FDA’s guideline for “High Protein” and foods are microwaveable
- Bars, protein sticks, cookies, etc., are handmade and baked with high quality ingredients
- Third-party testing: Commitment to producing world-class products is our #1 priority. Rigorous testing, both in-house and through third-party, FDA-approved laboratories, assures our clients that all nutritional claims meet or surpass FDA guidelines, USDA guidelines, and industry norms

Typical use
Use as needed to satisfy any of the stated goals:
- Weight control for portion control and accurate calorie counts
- Daily menu incorporation as a meal substitute to reduce or increase daily caloric intake
- Between meal snack as an energy boost or hunger killer
- Pre- and post-exercise/activity energy and recovery supplement
- Guiltless dessert
## Iced Lemon Vanilla Cream dotSTICK

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†Daily Value Not Established.

## Iced Peanut Butter Delight dotSTICK

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## Iced Blueberry dotBAR

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<tr>
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<td>Dietary Fiber 2g</td>
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<tr>
<td>Trans Fat 0g</td>
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<td>Sugars 11g</td>
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<tr>
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<td>Protein 15g</td>
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<tr>
<td>Sodium 130mg</td>
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Vitamin A 20% • Vitamin C 25% • Calcium 50% • Iron 10%
Creamy Peanut Butter dotTREAT

**Nutrition Facts**
Serving Size: 1 Treat (55g)
Servings per Package: 1
Calories: 230
Fat Cal.: 72

*Percent Daily Values (DV) are based on a 2,000 calorie diet.
†Daily Value Not Established.

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<td>Dietary Fiber</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>0g</td>
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<td>Sugars</td>
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<tr>
<td>Sodium</td>
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Vitamin A 4% •• Vitamin C 1% •• Calcium 10% •• Iron 6%

Peanut Butter Crunch dotBAR

**Nutrition Facts**
Serving Size: 1 Bar (45g)
Servings per Package: 1
Calories: 190
Calories from Fat: 50

*Percent Daily Values (DV) are based on a 2,000 calorie diet.
†Daily Value Not Established.

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<tr>
<td>Trans Fat</td>
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<tr>
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Vitamin A 0% • Vitamin C 0% • Calcium 6% • Iron 6%

Chocolate Crunch Supreme dotBAR

**Nutrition Facts**
Serving Size: 1 Bar (41g)
Servings per Package: 12
Calories: 160
Calories from Fat: 45

*Percent Daily Values (DV) are based on a 2,000 calorie diet.
†Daily Value Not Established.

<table>
<thead>
<tr>
<th>Amount/Serving</th>
<th>%DV*</th>
<th>Amount/Serving</th>
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<tr>
<td>Total Fat</td>
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<tr>
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</tr>
<tr>
<td>Sodium</td>
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<td>Protein</td>
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</table>

Vitamin A 2% • Vitamin C 1% • Calcium 7% • Iron

Chocolate Mint Crunch dotBAR

**Nutrition Facts**
Serving Size: 1 Bar (41g)
Servings per Package: 12
Calories: 160
Calories from Fat: 45

*Percent Daily Values (DV) are based on a 2,000 calorie diet.
†Daily Value Not Established.

<table>
<thead>
<tr>
<th>Amount/Serving</th>
<th>%DV*</th>
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<tr>
<td>Total Fat</td>
<td>5g</td>
<td>8%</td>
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<td>Saturated Fat</td>
<td>1g</td>
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<tr>
<td>Trans Fat</td>
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<td>Sugar Alcohol</td>
</tr>
<tr>
<td>Sodium</td>
<td>110mg</td>
<td>5%</td>
<td>Protein</td>
</tr>
</tbody>
</table>

Vitamin A 2% • Vitamin C 1% • Calcium 7% • Iron 3%

**This sugar alcohol blend contains approx. 2.8 cal/g.**
dotFIT Powdered Mixes

All products can be used to significantly improve
1) any weight loss program
2) exercise-induced muscle and performance gains
3) recovery from exercise and training bouts
4) energy levels
5) the nutritional content of diet

Positioning

A healthy, convenient assortment of mixes designed to be integrated into your daily meal planning in order to assist you in reaching and maintaining your sport and fitness goals. All products in the dotFIT powdered mix line can be selected based on taste, preference, venue, or calorie requirements for any of reasons listed in the Typical Use section shown below.

Advantages of mixes

• Have it your way: powdered mixes are simply the starting materials you use to create whatever formula is needed
  • By adding other ingredients into the mix, you can create any level or ratio of calories, protein, fats, carbohydrates (CHO) and other nutrients
• Can be used as a tasty and convenient way to deliver important but often neglected nutrients
  • Many nutritionally important fruits containing fiber, phytochemicals, etc., can be mixed with the powders to help anyone regularly consume a healthy diet
• Allows near immediate nutrient absorption that continues throughout the necessary time period that allows the exerciser to maximize the muscle building/recovery potential of the post exercise “metabolic windows” of muscle growth & repair (see nutrition dotFIT overview section on “metabolic windows”). All formulas used in studies demonstrating performance and size enhancements using pre- & post-exercise feedings were in liquid form
• Can deliver immediate energy lasting throughout the training period as well as the necessary nutrition to maximize the exercise bout whenever time is an issue

Overall unique features

• See individual dotFIT powdered mix products for their specific unique features
• All use only the highest quality/grade proteins with enhancing cofactors (e.g. Aminogen®, PeptoPro®, lactase, etc.) to aid digestion, absorption and utilization
• No aspartame, low sugar and relatively low sodium
• nutrition dotFIT products are designed in a synergistic relationship with all dotFIT products and a person’s traditional food intake. nutrition dotFIT products are NOT spiked with unnecessary nutrients. Most other products in this space (e.g. bars, shakes, ready to drinks, etc.) are heavily spiked with many nutrients that can lead to undesirable levels within the body when combining multiple manufactures, products and normal food intake. Because of our product synergy, use of our complete product line promotes safe and optimal daily nutrient intake
• Formulated and manufactured for great taste and pleasing texture in an FDA-registered facility in compliance with Good Manufacturing Practices (GMPs) and maintains rigorous product testing

Typical Use

Use as needed to satisfy any of the stated goals:

• Weight control for portion control and accurate calorie counts
• Daily menu incorporation as a meal substitute to reduce or increase daily caloric intake
• Vehicle to deliver often ignored but healthy nutrients (add desired ingredients to the mix)
• Between meal snack as an energy boost or hunger killer
• Pre- and post-exercise/activity energy and recovery supplement
• Guiltless dessert
Pre/Post Workout Formula & Meal Replacement™
Goal

The purpose of the Pre/Post Workout Formula is to accomplish two important health, sport and fitness goals: 1) satisfy and compliment the evolving change in society’s eating patterns by supplying great tasting meals and snacks – i.e. deliver better, satisfying nutrition in fewer calories; 2) because of the unique formulations, all dotFIT mixes, including the Pre/Post Workout Formula, will also be able to deliver the perfect ingredients to serve as the pre- and post-exercise/activity supplement that has been proven necessary to enhance training-induced results.

Anchored by a blend of high-quality proteins (whey protein isolate, whey protein concentrate, calcium caseinate, and micellar casein), medium chain triglycerides and essential fatty acids to support the special needs of active individuals, the Pre/Post Workout Formula was designed to provide critical support for muscle growth and repair while simultaneously providing a steady supply of energy.

Rationale

Weight control

It has been well established that successful dieters, weight loss maintainers, athletes and others able to control a healthy weight regularly incorporate meal replacement/substitute type foods1,2,3,4,5,6,7,8,9,10 (see Figure 4 A & B), such as meal replacements, ”protein shakes,” etc. into their daily meal plans for the following reasons:11,12,13,14,15,16

- More for less--allows you to increase the frequency of daily meals while managing calories in order to satisfy appetite17 and maintain greater daily energy levels i.e. more nutrition18 and fullness with fewer calories and often significant savings in groceries. Proper use throughout the day can deliver good nutrition while helping to save calories, allowing you to partake in larger meals/favorite foods at desired times (e.g. higher calorie lunches and/or dinners)
- Accurate calorie counts of total daily food intake when compared to having to estimate the calories of self-prepared or unmarked meals19
- Portion control--people generally attempt to consume meals to completion; therefore meal portion size significantly impacts a person’s total calorie intake. Overwhelming evidence validates that the smaller the portions, the fewer daily calories consumed20,21,22
- A healthy, lower calorie alternative to traditional fast foods
- Convenient storage anywhere and faster than stopping and picking up generally less healthy, higher calorie, traditional fast foods

Figure 4: A. In all six studies the groups that were using meal replacements (PMR) as part of their overall calorie intake lost significantly more weight than the reduced calorie diet (RCD) group. B. In a 1-year follow-up in the groups that were tracked, the subjects still using meal replacements maintained significantly more weight loss than the RCD group.”
Daily menu incorporation

Pre/Post Workout Formula satisfies the criteria for smaller meals or can be a balanced addition to increase meal size.

Reduced meal size: busy people often need quick nutrition that can satisfy nutritional needs and deliver energy while keeping calories within a range that allows a healthy weight. Multiple large daily meals are not needed for most people today because of low activity in the workplace and during leisure time (sedentary entertainment). 13

Increase meal size or calorie intake: when weight/muscle gain is the goal and it becomes difficult to increase the consumption of traditional foods in order to continue to add lean body mass (LBM), liquid meals offer the ideal solution. Easy/convenient to consume preparations can be added to any meal or daily menu plan to deliver exactly what's needed so the surplus nutrients/calories are incorporated into muscle tissues rather than body fat when appropriate resistance exercise is included. 24,25,26

Snack between meals: The Pre/Post Workout Formula is convenient for snacking to deliver quick energy or to take the edge off hunger without running up the calories. Using the meal replacement shake for snacking may also decrease the amount of food consumed in the subsequent meal or keep you from making an inappropriate food choice (e.g. decadent high calorie meal driven by an uncontrolled craving) as often happens when extra hungry and especially during weight loss.

Pre- and post-exercise/activity energy and recovery supplement

Because of the length of time it takes to digest and absorb the nutrients from traditional meals, whole/traditional food meals cannot deliver the required nutrients within a timeframe that allows maximum results induced by exercise when compared to the proper use of quick-digesting specialized formulas. 24,26,27,28

All dotFIT mixes including Pre/Post Workout Formula meet the necessary “quick digestion”, carbohydrate and protein content criteria that have been shown to deliver an increase in energy, maximize recovery and increase muscular development when consumed before27,29,30 and after exercise. 24,31,32 dotFIT liquid pre- and post- feedings (shakes/mixes or ready to drinks) have the fastest absorption time. Requiring little time spent on digestion and absorption and maximizing the rate of recovery and building.

Metabolic windows of growth

Immediately following exercise, muscle cell nutrient uptake is at its highest point of the day and therefore this “window of opportunity” requires a well-designed fast-acting formula. 25

Virtually all studies have demonstrated that the inclusion of “immediate” pre- & post-training fast-acting carbohydrate/sugars and protein feedings can stimulate muscle protein synthesis (MPS) 27,33,34,35,36 and reduce muscle damage to a far greater extent than normal meals/feeding patterns. 27,32,37,38 In other words, no matter how well you eat throughout the day, you recover faster and build more muscle and strength by including these quickly absorbed pre- and post-exercise formulas (see Figure 5). 26,27,39

We also recently discovered that although the post-training metabolic window is active for as much as 60-90 minutes, its maximum activity (greatest nutrient uptake and protein synthesis capabilities) takes place immediately at the end of the training session. 26,28,36 From that point on, the longer you wait to supply the proper nutrients or the more time they take to get to the affected tissues, the less muscle building or recovery takes place during this period and can’t be made up for at any other point in time.
Figure 5: Training results from 23 experienced recreational bodybuilders resistance training for 10 weeks with all things (diet, supplements, training, etc.) equal except the addition of pre/post feedings yielded significantly greater gains in body mass, LBM, and reduction in fat mass for the pre/post feeding subjects.

### The proper pre/post formula

There is no longer a debate whether pre- and post-workout feedings enhance exercise-induced results. Volumes of peer review literature and studies continue to not only validate this now established fact, but also document the proper formulas.40,41,42

The formulas used in scientific studies are all relatively the same: within the range of one point five to four parts carbohydrate (CHO) to one part protein and low to no fat. The CHO range is based on the activity being studied – the longer the workout the higher the carbohydrate/sugar content. The Pre/Post Workout Formula produces the desired results i.e. quick lasting energy, faster recovery and more muscle and strength gains from your workout.

The carbohydrate mixture must contain the proper amounts of simple, fast-acting sugars because the sugars/energy must enter the body quickly or the product loses effectiveness.35,43,44 The Pre/Post Workout Formula contains a sophisticated carbohydrate complex that can release almost immediately and continuously throughout the timeframe necessary to maximize protein synthesis during “metabolic windows” of growth. The formula also contains the right amount of amino and fatty acids, which besides their role in muscle building45 are also instrumental in managing the speed in which the carbohydrates continue to enter the body, allowing the recipient higher but consistent energy levels throughout the desired period. By consuming the same ingredients as the post-workout formula before the workout, we not only improve the user’s training energy levels, we can also enhance the recovery and muscle building process to a greater extent than solely ingesting the post-workout formula.28

Although recovery primarily takes place after the workout, you can help speed and enhance the process before you start exercise by ingesting the Pre/Post Workout Formula ten to 40 minutes before the workout (always make sure your pre-training full food meal is eaten two to three hours before exercise unless you train first thing in the morning and time does not permit). Proper carbohydrate/sugar content is important because it stimulates insulin production and insulin is our body’s most anabolic hormone thus “king” when it comes to building muscle.46,47 When you repeat the process immediately post-workout, you quickly restore energy (glycogen) while stimulating a renewed insulin release, which initiates and enhances the muscle-building hormone process/cascade thus recovery and results.

Recently pre and post feedings of carbohydrate and protein have also demonstrated the abilities to: reduce delayed onset of muscle soreness (DOMS),37,38 improve competitive performance,39,40 enhance immune function by decreasing exercise induced neutrophil degranulation,31 speed the recovery of neuromuscular functions after heavy training40 and increase the cell signaling related to protein synthesis,46 all compared to placebo and/or no immediate pre and post exercise/training feedings.
Typical Use

• A healthy, convenient food replacement designed to be integrated into your daily meal planning in order to assist you in reaching and maintaining your sport and fitness goals
• Pre- and post-workout feeding to maximize energy, muscle building and recovery. And can be made to any specifications (i.e. may add ingredients to achieve the desired level of calories protein, fats & CHO)
• Supply nutrient-rich, convenient snacks between meals to boost energy, curb hunger and assist in weight control by controlling calories
• Increase daily caloric intake when unable to do so by consuming whole food

Summary

Purpose

The Pre/Post Workout Formula is a healthy, convenient food replacement designed to be integrated into your daily meal planning in order to assist you in reaching and maintaining your sport and fitness goals, provide pre- and post-workout nutrients to maximize energy, muscle building and recovery, and can be made to any specifications (i.e. may add ingredients to achieve the desired level of calories protein, fats & CHO). Additionally the Pre/Post Workout Formula can supply a nutrient-rich, convenient snack between meals to boost energy, curb hunger and assist in weight control by controlling calories. dotFIT Pre/Post Workout Formula can be used to meet daily caloric needs when unable to do so by consuming whole food.

Unique Features

• Perfect blend of the highest quality proteins (whey protein isolate, whey protein concentrate, calcium caseinate, and micellar casein)
• Ideal blend of fast- and continuous-acting carbohydrates for quick and steady energy and recovery with only three grams of sugar per serving and NO ASPARTAME
• Healthy blend of essential fats
• Designed in a synergistic relationship with all dotFIT products and a person’s traditional food intake. It is NOT spiked with unnecessary nutrients. Most other products in this space (e.g. bars, shakes, ready to drinks, etc.) are heavily spiked with many nutrients, leading to undesirable levels within the body when combining multiple manufacturers, products and normal food intake
• Because of our product synergy, use of our complete product line promotes safe and optimal daily nutrient intake
• Formulated and manufactured for great taste and pleasing texture in an FDA-registered facility, in compliance with Good Manufacturing Practices and maintains rigorous product testing
Supplement Reference Guide

This information is educational material for dotFIT certified fitness professionals. This literature is not to be used to imply that dotFIT products may diagnose, treat, cure or prevent any disease.

Nutrition Facts

| Amount Per Serving | % Daily Value *
|--------------------|----------------
| Total Fat          | 7 g            | 11% | Total Fat: 7 g  | 11% |
| Cholesterol        | 5 mg           |    | Cholesterol: 5 mg |    |
| Sodium             | 134 mg         | 7%  | Sodium: 134 mg | 7% |
| Total Carbohydrates| 20 g           | 6%  | Total Carbohydrates: 20 g | 6% |
| Fiber              | 2 g            | 1%  | Fiber: 2 g | 1% |
| Protein            | 2 g            | 4%  | Protein: 2 g | 4% |

*Percent Daily Values based on a 2000 calorie diet. Your daily values may be higher or lower depending on your caloric needs.

References


Allergen Statement: Contains milk, produced in a facility that also processes egg, soy and shellfish.

Contains: No; Thio; Cysteine; Shellfish; Tree nuts; Peanuts; Soy or Other: No; Starch; Artificial coloring or Preservatives added.


20 Levitsky DA, Youn T. The more food young adults are served, the more they overeat. J Nutr. 2004 Oct;134(10):2546-9.


2004 Nov 23.
FirstString™

Goal

The goal of FirstString is to provide the ideal formula containing a mix of protein (P), carbohydrates (CHO) and fats (F) that meet the NCAA and Pro Sports guidelines (NCAA Bylaw 16.5.2.2) for college and professional athletes. This is while satisfying the established criteria of a pre- and post- exercise/activity meal needed to maximize the training response, thereby leading to greater gains in strength, size and/or performance and competition outcomes. FirstString is also NSF Certified For Sport, which is a separate testing and certification program that assures all amateur and professional athletes that the products (and respective manufacturing facilities) are pure, safe and free of banned substances. The NSF Prohibited Substances List includes banned substances identified by leading sports organizations, such as the World Anti-Doping Agency (WADA), the National Football League (NFL) and Major League Baseball (MLB).

The NSF Certified for Sport™ Program certifies products and inspects facilities for a range of substances. NSF's history of independence led to a partnership with the National Football League (NFL) and the NFL Players Association to develop and administer the NFL/NFLPA Supplement Certification Program, a first-of-its-kind program designed especially for professional football. Visit the NSF website for more on NSF Certification program http://www.nsf.org/business/athletic_banned_substances/index.asp?program=AthleticBanSub.

For more on pre- and post-training formulas and meal replacements, see the nutrition dotFIT overview.

Rationale

Proper diet manipulations with specialized formulas create and take advantage of “metabolic windows” throughout the day where muscle cells become highly receptive to the nutrients necessary to maximize recovery1,2,3,4,5,6 and those used to increase protein synthesis7,8,9,10,11,12 specifically before and after training.3,9,13,14,15,16

Proper timing and composition of nutrients can trigger a hormonal state that can reduce muscle damage while increasing muscle building, leading to a greater net increase in protein synthesis when compared to normal feeding patterns with equal diet components (total calories, protein, fats and carbohydrates).18,19,20,21 Accomplishing the ideal hormonal environment for muscle building is a function of carbohydrates (CHO), proteins and fats being supplied in proper ratios, forms and at specific times in relation to training periods.5,17 FirstString delivers these macronutrients in the proper form and amounts that have been demonstrated by numerous clinical trials to enhance training results when compared to a non-supplemented state.

An approximate 2:1 ratio of CHO to protein, as in FirstString, has been shown to enhance protein synthesis when used post-training compared to placebo.4,17,21,23,24,25,26

Recently pre- and post-feedings of carbohydrate and protein have also demonstrated the abilities to reduce delayed onset of muscle soreness (DOMS),5,6,27 improve competitive performance,17,27,28 enhance immune function by decreasing exercise induced neutrophil degranulation,29 speed the recovery of neuromuscular functions after heavy training30 and increase the cell signaling related to protein synthesis,17 all compared to placebo and/or no immediate pre and post exercise/training feedings.

Typical Use

As a pre- and post-workout supplement, each training day (dose ranges based on size), 10-40 minutes pre-workout:
• Under 200 lbs, consume two scoops; over 200 lbs, consume four scoops
• Immediately following training, repeat the same dose
• As a meal replacement or weight gain supplement use as needed throughout the day to meet individual calorie and nutrient goals
Summary

Purpose

• The base product is a higher calorie and CHO to protein ratio per serving than other dotFIT powders, allowing the product to serve multiple roles: pre/post-training supplement, weight gainer and meal replacement
• Targeted to all athletes but primarily marketed to the youth, college and professional athletes since it is NCAA approved and NSF Certified. As a supplement FirstString can help maximize a child’s athletic development including overall growth potential; it is a natural and safe product for the youth population
• The 42 grams of the best quality proteins (see WheySmooth™ for info on proteins) and 86 grams of CHO packed into 570 calories (vanilla flavor) make FirstString™ the perfect muscle gain formula
• Can deliver exactly what’s needed so surplus nutrients/calories are incorporated into muscle tissues rather than body fat when appropriate resistance exercise is included and total daily calories are appropriate

Unique Features

• Contains Aminogen®, which has been shown to increase the body’s uptake of amino acids/protein, making greater amounts available to the working muscles and decrease in incidences of bloating/gas common with competitive products
• CHO content satisfies the necessary profile for maximizing protein synthesis while fitting into a “low sugar” claim, which will appeal to prevailing perceptions
• 42 grams of protein, 86 grams of CHO and only eight grams of sugar (vanilla flavor)
• No aspartame and relatively low sodium
• Sophisticated ideal blend of the highest quality fast and slow acting proteins
• dotFIT meal replacements (nutrition dotFIT) are designed in a synergistic relationship with all dotFIT products and a person’s traditional food intake. These products are NOT spiked with unnecessary nutrients. Most other products in this space (e.g. bars, shakes, ready-to-drinks, etc.) are heavily spiked with many nutrients that can lead to undesirable levels within the body when combining multiple manufacturers, products and normal food intake
• When consuming only dotFIT products as directed with one’s normal daily food intake, the recipient is assured of keeping the body at a safe and optimal nutrient level
• Manufactured in a FDA-registered facility, in compliance with Good Manufacturing Practices (GMPs) exclusively for dotFIT, LLC

Nutrition Facts
References


22. Suzuki M. Glycemic carbohydrates consumed with amino acids or protein right after exercise enhance


WheySmooth™

Goal
WheySmooth is designed to deliver a high quality protein (PRO) source, rich in essential amino acids, which allows a high protein intake even during a low calorie diet. WheySmooth comes in a powdered form allowing the user to mix and adjust the total protein and other nutrient content as needed/desired. Whey proteins can be useful for improving training outcomes by 1) increasing protein intake when whole food sources are insufficient or not an option (i.e. early morning workouts or low-calorie diets); 2) maximizing lean muscle mass in exercising or dieting adults; 3) hastening and improving recovery from exercise bouts; and 4) supporting immune function during high volume training.

Rationale
Timed ingestion of whey protein both pre- and post-workout facilitates a more rapid absorption of amino acids into the bloodstream and their subsequent delivery to the target tissues when compared to other sources of proteins. Whey protein hydrolysates have the highest content of essential and branched chain amino acids of any protein and yield small peptides that are absorbed quickly into the bloodstream. For bodybuilders, wrestlers, or other weight-conscious athletes preparing for competition (these athletes are often underfed and overtrained at this point), these formulas offer a viable way to meet protein and amino acid requirements for maintaining and increasing lean mass while calorie intake remains low enough to accomplish the body composition or weight goals.

As exercise intensity and volume increase, muscle amino acid and glycogen stores are depleted. This can induce a catabolic state in the athlete and impair recovery if adequate post-exercise nutrition is not available. Zawadski et al showed that the addition of whey protein to a carbohydrate (CHO) drink, post-workout, accelerated muscle glycogen synthesis compared to CHO alone. The result may be attributed to a greater insulin response to the CHO/PRO combination than with CHO alone (see Figure 6). Both protein/CHO solutions used whey as the protein source and as you can see, the addition of leucine further increased the insulin response. Insulin is a powerful anabolic hormone necessary for stimulating muscle protein synthesis (MPS). It is widely accepted in the scientific community that resistance training (RT) increases muscle protein synthesis (MPS). Research has firmly established that the combination of RT and whey protein ingestion produces a synergistic effect on muscle hypertrophy by supplying a unique grouping of essential amino acids (specifically leucine) post-RT to initiate and enhance MPS. The combination of whey protein’s ability to accelerate glycogen resynthesis and stimulate MPS may significantly improve exercise recovery leading to greater training outcomes (e.g. muscle hypertrophy, sports performance, strength).

In summary, whey protein appears superior to other proteins based on its amino acid content (high in BCAA including Leucine) and its ability to increase MPS to a greater degree than other proteins and/or carbohydrates alone. The latter consequence may be due to whey’s quick absorption time allowing it to arrive at the training-affected muscle tissues sooner within the all important 60-minute “metabolic window” of growth (see Pre/Post Workout Formula for more on metabolic windows) and possibly by whey protein’s ability to uniquely trigger and prolong MPS in part by enhancing the phosphorylation of select proteins within the mammalian target of rapamycin (p70S6K, eEF2) and by activating proteins within the mitogen-activated protein kinase (ERK1/2, p90RSK) signaling. When combining fast-acting whey protein with slower releasing casein proteins, you have the perfect protein combination for maximizing MPS.

Whey and immune system
Whey protein may help sustain the immune system during high-volume training cycles. A high concentration of cysteine is found in whey protein, which is needed for glutathione production, a natural antioxidant found in the body. Glutathione may assist in repairing damaged cells including cells of the immune system due to stressors, such as exercise and keep them running smoothly. Proper use of whey proteins for certain athletes during intense training may significantly enhance the desired outcomes, especially if total calorie intake is being limited to allow the pursuit or maintenance of low body fat.
Figure 6: Insulin response to three different post-workout drinks.

**WheySmooth**

Precision formulated to improve body composition and enhance performance, dotFIT’s WheySmooth is packed with a stunning 40 grams of medical-grade protein from five different, very high biological value sources (whey protein isolate, whey protein concentrate, egg albumin, calcium caseinate, micellar casein). WheySmooth’s matrix of “slow” and “fast” releasing proteins and essential fatty acids help ensure WheySmooth provides the best of both worlds; keeping you and your muscles in an anabolic state all day long.

**PeptoPro**

PeptoPro is comprised of small pieces of protein, mainly di- and tripeptides (two or three amino acids), giving it two key advantages. First, PeptoPro amino acids are quickly taken up by the body and delivered to the muscles. This is ideal for pre- or post-activity feeding. Second, compared to intact protein and other hydrolysates, PeptoPro has better taste and texture properties, ensuring that ours is the best tasting, most effective protein supplement on the market.

**Aminogen®**

Aminogen is clinically proven to increase amino acid levels and boost nitrogen retention.49 Developed by Triarco Industries, Aminogen is a patented, natural, plant-derived designer enzyme which breaks down protein and improves amino acid absorption. Aminogen also supports protein digestion while reducing or eliminating the gas, bloating and constipation some users experience with protein supplements.

**Co-factors**

**Pyridoxal 5' Phosphate** (the active form of vitamin B6) is involved with a myriad of functions in the body, but of interest here is its role in protein metabolism (catabolism/anabolism) and immune function.50

**Lactase** is the enzyme that breaks down lactose (milk sugar). Isolated protein sources derived from milk contain miniscule amounts of lactose (2.4gms/serving) and should pose no problem to those who may be lactose intolerant (unable to make the enzyme lactase). But, to be on the safe side and insure that we have the most easily digested and utilized formula, it is included.

**Typical Use**

WheySmooth™ is ideal for athletes or exercisers seeking to acquire the highest amount of protein with the least amount of calories in order to maximize training induced size, performance and strength outcomes.

- Adults who do not meet protein requirements from food intake, especially physique and other athletes (strength, endurance and active recreational) during an adaptation period
• Weight and body-fat conscious athletes during the final weeks of competition dieting, in order to meet protein requirements with fewer calories
• Underfed and over-trained athletes
• Anyone wanting a great tasting, convenient protein source
• Those concerned with proper timing of protein intake and want the quick digestibility that cannot be accomplished by traditional food sources

Precautions
Some studies have shown an increase in calcium loss with high protein intakes which may predispose the individual to an increased risk of osteoporosis.51 However, several recent studies have found the link between protein intake and bone health to be positive.52,53 The Institute of Medicine's and other related studies have concluded that levels of dietary protein are not associated with a decrease in renal function with age.14,15,16,57

Contraindications
WheySmooth is contraindicated in pregnancy and lactation unless protein needs cannot be met by food alone. WheySmooth is contraindicated in people who cannot consume milk proteins.

Adverse Reactions
There should be no adverse effects in healthy users at the recommended doses.

Upper Limit/Toxicity
Currently there is no UL established for protein.

Summary
Purpose
Because of whey protein's structure, high essential amino acid content and bioavailability, this product is ideal for athletes or exercisers seeking to acquire the highest amount of protein with the least amount of calories in order to maximize training induced size, performance and strength outcomes.

Unique Features
• Forty grams of protein from the highest BV sources, giving WheySmooth its unique “fast and slow” release pattern
• PeptoPro® peptide complex for rapid absorption and utilization and superior taste and mixing properties
• Aminogen® for more complete protein digestion, amino acid absorption and nitrogen retention
• Co-factors available to ensure greater amino acid and protein utilization
• Great taste, easy mixing
• No gas or bloating as is common with other protein powders
• Contains only 2 grams of sugar per serving and NO ASPARTAME
• Manufactured in a FDA-registered facility, in compliance with Good Manufacturing Practices (GMPs) exclusively for dotFIT, LLC
Supplement Facts

<table>
<thead>
<tr>
<th>Amount per Serving</th>
<th>% Daily Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fat</td>
<td>4.5 g</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>1.4 g</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>0.0 g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>60 mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>330 mg</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>14 g</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>4 g</td>
</tr>
<tr>
<td>Sugars</td>
<td>2.5 g</td>
</tr>
<tr>
<td>Protein</td>
<td>40 g</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>0 IU</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>0 mg</td>
</tr>
<tr>
<td>Calcium (from Milk Protein)</td>
<td>200 mg</td>
</tr>
<tr>
<td>Iron</td>
<td>1.8 mg</td>
</tr>
<tr>
<td>Phytochemical Blend Lactase 4,000 ALU</td>
<td>64 mg</td>
</tr>
<tr>
<td>Alpha-linolenate derived from Asparagus riperi and Asparagus spicatum</td>
<td>250 mg</td>
</tr>
</tbody>
</table>

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

** % Daily Value not established.

Other Ingredients: Protein Blend (Whey Protein Concentrate, Calcium Caseinate, PeptidePro – Casein Hydrolysate, Whey Protein Isolate, Egg White Protein, Micellar Calcium), Dutch Processed Cocoa Powder, Matricaria, High Oleic Sunflower Oil, Carrageenan, Monoglycerides, Lecithin, Enzyme blend (Lipase and Lubricant), Salt, Pantothenic Acid, Phosphoric Acid, Sorbic Acid, Natural Aroma, Salt, Artificial Coloring and Preservatives added.

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11 Luc J.C. van Loon Application of Protein or Protein Hydrolysates to Improve Postexercise Recovery. Int J Sport Nutr Exerc Metab. 2007 August: 17(Supp ): S104-S117
34 Børsheim E, Tipton KD, Wolfe SE, Wolfe RR. Essential amino acids and muscle protein recovery from
47 Bounous G. Whey protein concentrate (WPC) and glutathione modulation in cancer treatment. Anticancer Res. 2000 Nov-Dec;20(6C):4785-92. Review.
Appendix
Appendix I

dotFIT Worldwide’s Position on Vitamin & Mineral Supplementation

Content utilized by permission from The National Academy of Sports Medicine

Abstract
Defining the perfect diet has been a laborious task for the nutritional sciences for decades. Likewise, specifying the optimal intake of vitamins and minerals is difficult in the face of continuing nutrient research. This makes giving concrete nutrient recommendations challenging. For most nutrients, there is a large therapeutic range within which the average person will receive benefit and simultaneously remain below the threshold that can yield adverse events. It is one matter to define nutrient recommendations and another to actually consume the recommended dosages through the course of a normal day with typical foods. The notion that you will satisfy all physiological needs of the body for proper and ideal nutrient intake with food alone is impractical and outdated. Some of the obstacles to proper eating and ideal nutrient intake include insufficient food intake, increased needs that are not met by food alone, and dislike or avoidance of essential food groups.

Therefore, at worst vitamin and mineral supplementation acts as insurance against short and long-term dietary lapses, and guesswork in nutrient intake, including the ability to define the optimal diet. At best, using valid science to increase the nutrient content of available and typical food intakes may yield optimal functioning for an extended period, as compared to a non-supplemented state.

Introduction

The notion of vitamin and mineral supplementation, including the fortification of food, began with the intent to supply essential dietary nutrients significantly lacking in some geographical regions and to shore up inadequate nutrient content of the general population’s typical food intake to meet the Recommended Dietary Allowances (RDAs). Without supplementation, severe nutritional deficiencies would be widespread, as they once were.1

The RDAs are, by definition, “the levels of intake of essential nutrients that, on the basis of scientific knowledge, are judged by the Food and Nutrition Board to be adequate to meet the known (current) nutrient needs of practically all (97-98% of the population) healthy persons.”2 They are not intended to be final, minimal or optimal. Rather, RDAs and the Dietary Guidelines are designed to prevent nutritional deficiencies by providing Americans with goals for adequate nutrient intake that most are not reaching.3,4,5,6,7,8,9,10,11

Dietary nutrient recommendations for achieving health are continuously being revised and generally trend upward as the scientific community gathers more data related to how different nutrient intake levels may affect overall health and longevity. Therefore, rather than simply updating the RDAs, which are set only for the average person to avoid deficiencies, the US Food and Nutrition Board, now an element of the Institute of Medicine, released the new Dietary Reference Intakes (DRIs) in 1994 and have updated them since. These evidence-based standards go beyond amending deficiencies; they also suggest the amount of nutrients needed for enhancing health. DRIs are as follows:

The Recommended Dietary Allowance (RDA) is the average daily dietary intake level that is sufficient to meet the nutrient requirements of nearly all (97 to 98 percent) healthy individuals in a specific life stage and gender group. The RDA is intended primarily for use as a goal for daily intake by individuals.12

Estimated Average Requirement (EAR) is the daily intake value that is estimated to meet the requirement, as defined by the specified indicator of adequacy, in 50 percent of the individuals in a life stage or gender group. At this level of intake, the other 50 percent of individuals in a specified group would not have their nutritional needs met. The EAR is used in setting the RDA.13

Adequate intake level (AI) is a value based on experimentally derived intake levels or approximations of observed mean nutrient intakes by a group (or groups) of healthy people.12
The Tolerable Upper Intake Level (UL) is the highest level of daily nutrient intake that is likely to pose no risks of adverse health effects in almost all individuals in the specified life stage group. As intake increases above the UL, the risk of adverse effects may increase. The intent is to set the UL so that it is below the threshold of even the most sensitive members of a group.

However, despite the efforts of the scientific community, including the Food and Nutrition Board of the National Research Council and its DRIs, the general population is not meeting the majority of the requirements for vitamins and minerals. According to “What We Eat In America, NHANES,” Americans meet very few of the standards for dietary adequacy. All recent nutrient intake surveys have shown the same results: virtually no one gets the recommended amounts of all nutrients from food alone.

Why the Inadequacies?

1. The majority of the general population does not have the ability to properly analyze foods, much less buy, prepare and consume each in the proper array to meet daily requirements.14,15

2. Today’s sedentary environment, which is promoted by increasingly inactive jobs, convenient forms of communication, easy access to food, comfort and entertainment, prohibits most of the general population from consuming the calories necessary to reach these recommended nutrient levels without gaining weight. In addition, because of the lack of movement in today’s society, the large portion of the American adult population participating in weight reducing diets are forced to severely restrict food intake in order to sustain weight loss, a condition that all but assures nutrient inadequacies without supplementation.16,17,18,19,20,21,22,23,24,25,26,27,28,29

3. In general, food preferences established early in life keep people from more diverse nutritional choices. For most, the early introduction of sugar and fatty convenient foods (e.g. fast food outlets) creates addictions to these types of food, leaving many undernourished in terms of the RDAs for the long term. In other words, the foods most people normally choose are high in energy but low in nutrients.30,31,32

4. Available nutritional information regarding particular foods is not necessarily accurate. The true nutritional content of a given food is dependent upon such factors as its origin, time and maturity of its harvest, slaughter, cooking method, processing, and shelf life. In addition, any calculations are vulnerable to analytical error. These factors illustrate that just because a list of nutrients associated with a food is published, those nutrients are not guaranteed to actually enter the body. Performing an ingredient test on each food before it enters the body is not a practical solution.

Vitamin and mineral losses become cumulative. While an argument can be made that the RDAs include a margin of safety to address some of these problems, many of the RDAs are established as “sub-optimal,” as demonstrated by the continual upward trend. No margin of safety can compensate for a nearly complete lack of an essential nutrient due to any of the above factors, especially soil content. This was illustrated, though inadvertently, in a study conducted by Clark, Combs and Turnbull. The study’s subjects were selected from a region in the United States where there is little to no selenium in the soil. The dramatic cancer preventative benefits witnessed in the selenium-supplemented group compared to the placebo users are most likely attributed to the lack of selenium in the food supply from this area. All these uncontrollable issues become the strongest argument in support of the current scientific approach that no matter how well you plan your diet, you need “insurance.”

Even trained professionals struggle with guidelines. In a 1995 study published in the Journal of the American Dietetic Association, dietitians were asked to design diets that met the 1989 RDAs and 1990 Dietary Guidelines while providing 2200-2400 calories (the average non-athletic female gains weight at 1800 calories) and remaining palatable to the individuals in the study. Using software designed specifically for creating a healthy diet, these trained dietitians were unable to accomplish the objective. If health professionals cannot consistently reach the RDAs and dietary guidelines within an average amount of calories that promotes leanness while being universally palatable, how is the general public expected to do so?
Poor nutrition has been linked to an increased risk of many diseases including cancer, heart disease, and diabetes. One highly regarded researcher proposes that nutrient inadequacies may actually illicit a triage response where the body would prioritize the use of lacking nutrients by urgency which, if true, would accelerate cancer, aging, and neural decay but would leave critical metabolic functions intact; basically favoring short-term survival at the expense of long-term health.48

Collectively, the aforementioned circumstances strongly suggest nutrient augmentation to food intake in order to meet the existing DRIs, which still may not be optimal40,41,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68 but are adequate for avoiding deficiency diseases.

Discussion
The original paradigm based on nutritional essentiality is undergoing a shift. Many well-informed health professionals and well-respected institutions are breaking precedent by recommending the use of a multiple vitamin and mineral supplement (VMS) in conjunction with a well-balanced diet.43,44,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68 Aside from the “insurance” value, the changing views on VMS recommendations are also a result of ongoing research into the amount of a nutrient required to prevent a chronic disease from occurring, rather than simply preventing a deficiency state.2,64,72,73,74,75,76,77 These revised recommendations led to the reconstruction of the RDAs into the Dietary Reference Intakes (DRI).2,12,78,79,80

RDA levels of specific nutrients will continue to be revised, and wide ranges of safe and potentially effective intakes established (see Figure 24). This makes it nearly impossible for the general population to reach potentially beneficial amounts while remaining within a calorie level that would promote healthy body fat levels without supplementation.47,50,75,81,82,83 The DRIs provide a new framework within which recommendations of nutrient intake and clear health benefits can be established.

Establishing beneficial nutrient levels with little to no risk
The issue still pending is just how much of each nutrient is needed, in general, to receive an optimal physiological response that fulfills the potential for health and performance. Though these exact amounts are currently unknown and will always vary by individual, volumes of information exist on approximate values within a wide range of safety that suggest efficacy for the general population.40,41 In other words, the benefits of doses properly extrapolated from current research would greatly outweigh any unlikely risks from these doses, especially when compared to the risks resulting from no supplementation at all.

Using information available today, we must consider three levels of nutrient activity:

1. The amount of the nutrient to prevent overt deficiency disease.14 (Approximately between two-thirds of the current RDAs and the actual RDAs.)
2. When applicable, the amount of a nutrient that may support optimal benefits.42,54,60,61,62,63,64,65,66,67,68 (Approximately between the current RDAs and the No Observed Adverse Effect Level (NOAEL).)
3. The amount of a nutrient that may cause adverse reactions.40,41,84 (Lowest Observed Adverse Effect Level (LOAEL) and higher.)

Figure 24 illustrates how, within a wide range of safety, the amount of a nutrient required to achieve optimal benefits in performance and health can be approximated. As the concentrations of nutrient intake increases, different levels of biological function (total benefits) are approached.
Figure 1: Ultimate Goal of Nutrient Augmentation (RDA = Recommended Dietary Allowances, NOAEL = No Observed Adverse Effect Level)

1. Overt nutritional deficiency.
2. Typical intakes (2/3 of RDA, thus sub-optimal).
3. The RDAs, which we have established as sub-optimal for many nutrients.
4. NOAEL – A safe intake greater than the RDAs, and it is likely between this nutrient amount and its RDA where the optimal level of intake exists.
5. LOAEL – An intake that is not safe for all consumers therefore should generally be considered sub-optimal.

Safe and beneficial dosages

Cautious review of existing information following the criteria in Figure 1 suggests total nutrient intake to fall somewhere within the ranges shown in Table 1. Any nutrient not appearing in the table indicates that too little information exists to establish a range. Therefore, consuming a balanced diet will presumably meet the currently known need. These totals include the nutrient content of food intake and supplementation. Considering most nutrient ranges shown in Table 7 fall well within known safety margins and the often small contribution food makes to most of these desired levels, it would generally not be necessary for individuals to compile the nutrient content of daily food intake. Respecting this, daily supplementation should be no higher (maybe lower when marked) than the upper amount listed, which is commonly well below the tolerable upper limit. More active individuals may maintain intakes closer to the higher side of the range. Recently, it has been proposed that the age and gender of an adult determines the appropriate levels of certain nutrients.

These doses, even at the high end, are meant to enhance natural physiology (fulfilling potential related to health). They are not in pharmacological amounts that would be used to treat symptoms of disease. The use of vitamins and minerals for therapy should be conducted by a qualified physician.

Table 1: Safe and Probable Optimal Range Including Food Sources

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Low – High</th>
<th>Upper limit [IU]</th>
<th>LOAEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-formed vitamin A *</td>
<td>0 IU - 50,000 IU</td>
<td>50,000 IU (1000mcg)</td>
<td>21,645 IU</td>
</tr>
<tr>
<td>Beta carotene</td>
<td>10,000 IU – 20,000 IU</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin D (as)</td>
<td>400 IU – 900 IU</td>
<td>2000 IU</td>
<td>3000 IU*</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>150 IU – 300 IU</td>
<td>1500 IU</td>
<td>3000 IU</td>
</tr>
<tr>
<td>Vitamin K</td>
<td>50 - 120 mcg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>200 mg – 300 mg</td>
<td>2,000 mg</td>
<td>5,000 mg</td>
</tr>
<tr>
<td>Vitamin B1</td>
<td>2 mg – 30 mg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin B12 (macronutrient)</td>
<td>30 mg – 50 mg</td>
<td>35 mg</td>
<td>1000 mcg</td>
</tr>
<tr>
<td>Vitamin B6</td>
<td>6 mg – 90 mg</td>
<td>200 mg</td>
<td>300 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>400 mg – 900 mg</td>
<td>2,000 mg</td>
<td>3,000 mg</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>6 mcg – 300 mcg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calcium</td>
<td>1,500 mg – 2,000 mg</td>
<td>2,000 mg</td>
<td>5,000 mg</td>
</tr>
<tr>
<td>Magnesium</td>
<td>420 mg – 800 mg</td>
<td>250 mg</td>
<td>300 mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>1,500 mg – 3,000 mg</td>
<td>2,500 mg</td>
<td>4,000 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>15 mg – 30 mg</td>
<td>40 mg</td>
<td>70 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>2 mg – 4 mg</td>
<td>10 mg</td>
<td>-</td>
</tr>
<tr>
<td>Manganese</td>
<td>2 mg – 4 mg</td>
<td>14 mg</td>
<td>14 mg</td>
</tr>
<tr>
<td>Potassium</td>
<td>2000 mg – 3000 mg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sodium/Potassium Ratio Benchmark</td>
<td>1200 mg – 2400 mg</td>
<td>400 mcg</td>
<td>800 mcg</td>
</tr>
<tr>
<td>Selenium</td>
<td>100 mcg – 200 mcg</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

1 Supplemental amount can be zero if daily intake of beta carotene is within the safe and optimal range.
2 Smokers, those likely to develop, or those that already have lung cancer, should avoid beta carotene supplementation.
Proper intake

The synergy of these nutrients, including their daily levels, require they be consumed together but distributed as equally throughout a 24 hour period as possible to avoid over-saturation and losses. Individuals should start by following a healthy food plan as closely as possible, including a calorie intake that promotes healthy body fat levels, and adding a controlled-release multiple vitamin and mineral preparation to meet the appropriate nutrient levels.

Using an acceptable pill size, these amounts could be reached through ingestion of a multiple vitamin and mineral formula one to two times daily with meals. Generally, a separate calcium and Vitamin D supplement may need to be included in order to reach desired levels, which would also be consumed in split doses. This method helps maintain tissue target levels throughout the day, as opposed to consuming the total amount at one time which would diminish the desired result.

Conclusion

Vitamins and minerals ingested as described may allow the body to operate at full capacity without disturbing its natural physiology. The belief that individuals consume each health and performance-related compound in optimal doses, ratios and at proper times from food every day is unfounded, especially when all obstacles are taken into account, including the inability to define these levels. In addition, it is common knowledge that the general population does not consume more than what is needed of all necessary substances in their diets. These issues collectively indicate that any nutrient contributing to cellular health and performance has the potential to be lacking when food is the only delivery system.

Because of the safety margins of most nutrients, and paying strict attention to tolerable upper limits, distinctions can be made between the strongest possible evidence and instances where the evidence becomes strong enough regarding ingesting levels of nutrients that show potential in staving off chronic disease. In other words, when supplementing properly, potential benefits would greatly outweigh any unlikely risks. Therefore, at worst vitamin and mineral supplementation acts as insurance against short and long term dietary lapses, and guesswork in nutrient intake, including the ability to define the optimal diet. At best, using valid science to increase the nutrient content of available and typical food intakes may yield optimal functioning for an extended period, as compared to a non-supplemented state.

References

7 Mannino ML, Lee Y, Mitchell DC, Smiciklas-Wright H, Birch LL. The quality of girls’ diets declines and

33 Harnack L, Walters SA, Jacobs DR Jr. Dietary intake and food sources of whole grains among US
82 Cheng CH, Lin PT, Liaw YP, Ho CC, Tsai TP, Chou MC, Huang YC. Plasma pyridoxal 5’-phosphate and high-sensitivity C-reactive protein are independently associated with an increased risk of coronary artery disease. Nutrition. 2008 Mar;24(3):239-44.
Appendix 4: dotFIT Product Manufacturing and Testing

Below are dotFIT’s manufacturing partners who currently use 3rd party testing/audits and methods to quantify and qualify each product.

**Robinson Pharma, Inc.**
Provider of manufacturing services including soft-gels, tablets, and hard-shell capsules to dotFIT.

Quality is Our Business

Robinson Pharma, Inc. (RPI) is regulated by the FDA for all manufacturing of dietary supplements and must, by law comply with federal standards (21 CFR Part 111). As an extra assurance of compliance and quality RPI contracts with a number of highly respected third party expert organizations that periodically audit, and at their discretion, certify our facilities, practices, and products as compliant with published standards. These certifiers are:

- **USP DSVP (United States Pharmacopeia - Dietary Supplement Verification Program).** USP is the publisher of the United States Pharmacopeia and they offer verification our facilities, practices, and offer highly rigorous product specific certification.

- **NPA cGMP (The Natural Products Association - current Good Manufacturing Practices)** NPA is the oldest and largest trade association in nutritional products industry and offers their GMP Program which certifies compliance of facilities and practices.

- **STR RQP (Specialized Technology Resources - Retailer Qualification Program).** A well established program requested by many mass marketers that verifies facilities, practices, and offers post manufacturing market surveillance.

Robinson Pharma’s SOPs require that all active and inactive ingredients and components for each batch of product are tested for conformance to specifications. Tests include confirmation of identity, potency, and purity. SOPs also stipulate that finished products are tested for purity prior to release. Furthermore, key marker ingredients are tested to confirm that finished product meet label claim. All tests are performed by qualified operators using valid analytical methods on calibrated instruments.

RPI maintains extensive in house quality labs that were recently expanded at the cost of over $3,000,000.00. The RPI quality team includes over 50 dedicated staff members not including managers. The RPI on-site laboratory equipment currently includes:

- Physical & chemical purity and potency
- HPLC (with PDA and ELSD detectors)
- UPC
- HP-TLC
- LC-MS
- FT-IR
- NIR
- TOC
- UV-Vis Spectrophotometer

- Fatty Acid Analysis
- GC w/Headspace analysis
- Physical Characteristics
- Moisture Balance
- Dissolution and Disintegration testers
- Heavy Metal Contamination Analysis
- ICP/MS
- AA MS
Microbial Contamination Analysis
Conventional Microbiological testing

In addition to on-premises testing, RPI contracts for third party testing with STR, Silliker Labs, and other labs for ingredients and finished products as needed.

Learn more about our partners visit:
www.NPAInfo.org
www.STRquality.com
www.USP.org
www.silliker.com

**Integrity Nutraceuticals**
Manufacturer of powders for dotFIT.

Integrity maintains a strict quality program on all raw materials and finished products. All incoming raw materials undergo microbiological testing, heavy metals testing, contaminant testing and analysis for assay if applicable. For protein products in particular, all incoming raw materials are specifically tested to ensure protein content is attained in accordance with the specifications. All finished product is tested again for micro and heavy metals along with assays based on the type of product. This is all done via in-house equipment and varies by ingredient. Integrity currently has the following equipment to perform these tests: HPLC, FTIR, Soleris, LCMSMS, and AA. In-process testing is also conducted via FTIR and HPLC to ensure that a proper blend has been achieved. FTIR provides a fingerprint of the blend, whereas HPLC provides specific detail on an analyte.

**NSF – note: Certified for Sport™**
Good Manufacturing Practices are regulatory requirements that provide guidelines for necessary processes, procedures and documentation, assuring the product produced has the identity, strength, composition, quality and purity it is represented to possess. NSF conducted a plant audit of Integrity’s facility to verify compliance with GMPs and continues to conduct periodic audits of the facility to ensure continued conformance. GMPs for the current NSF Dietary Supplements Program are included in NSF American National Standard 173-Dietary Supplements, the only American National Standard for Dietary Supplement, and are consistent with the requirements that FDA has laid out in 21 CFR § 111.


To meet the growing demands of athletes, coaches and anyone concerned about banned substances in sports supplements, NSF International created the new NSF Certified for Sport™ Program. This new NSF program is a focused solution designed to minimize the risk that a dietary supplement or sports nutrition product contains banned substances.

**Objective**
The program objective is to certify that participating manufacturers of sports supplements have met NSF’s stringent independent certification process guidelines, which were developed through a consensus process involving regulatory, industry and consumer groups. A key component of this program will be a specially designed NSF Mark on each product label to show athletes, coaches and consumers that a sports supplement has met NSF’s comprehensive program guidelines.

This program, which focuses primarily on the sports supplement manufacturing and sourcing process, provides key preventive measures to:

- Protect against adulteration of products
- Verify label claims with product contents
- Identify athletic banned substances in the finished product or ingredients
Credibility
This program is part of NSF’s successful 60-year history of providing certification programs for food, water and consumer goods. Specifically, the NSF Certified for Sport™ Program builds on NSF’s expertise in the areas of dietary supplements and functional foods:

- NSF developed and maintains the only accredited American National Standard to certify dietary supplements, NSF/ANSI Standard 173.
- By building on NSF/ANSI 173, NSF developed a comprehensive product testing program in NSF accredited laboratories and an extensive manufacturing process evaluation to ensure the actual product contents match those printed on the label.
- NSF’s history of independence led to a partnership with the National Football League (NFL) and the NFL Players Association to develop and administer the NFL/NFLPA Supplement Certification Program, a first-of-its-kind program designed especially for professional football.

The NSF Athletic Banned Substances Certification Program

- APPLICATION
  - Formulation
  - Label
  - Ingredient supplier’s information
  - Manufacturing facility’s information

- TOXICOLOGY REVIEW
  - Label and formulation review and comparison
  - Ingredient review
  - Determine product testing

- FACILITY INSPECTION
  - Good Manufacturing Practices (GMP) audits of production facilities
    - Observations of in-house laboratories
    - Sourcing and traceability procedures
    - Schedule of ingredient supplier audits based on number of suppliers

- ANNUAL LABORATORY TESTING/ANALYSIS
  - Microbiological
  - Heavy metals
  - Pesticides/herbicides
  - Label content verification
  - Disintegration
  - Banned substances testing based on number of lots

- PRODUCT CERTIFICATION/LISTING
  - Monitor formulation/ingredient supplier changes
  - Unannounced follow-up audits
  - Marketplace sampling
Prohibited Substance List

The NSF Prohibited Substances List includes banned substances, identified by leading sports organizations, such as the World Anti-Doping Agency (WADA), the National Football League (NFL) and Major League Baseball (MLB). The NSF Certified for Sport™ Program certifies products and inspects facilities for a range of substances. These include the following:

- Stimulants
- Narcotics
- Steroids
- Diuretics
- Beta-2-Agonists
- Beta Blockers
- Masking Agents
- Other Substances

The program will be updated regularly based on the latest scientific developments in detecting banned substances and through input from regulators, industry and consumer groups in the international sports community. The specific list is located in Annex A of the NSF Athletic Banned Substances Guideline-306-2005.

Garden State Nutritional

Manufacturer of tablets, capsules, powders, liquids (shots to multi-serving containers), creams, gels, soft chews and gummies.

Garden State Nutritional (GSN) has built a reputation over three decades as a trusted leader in the formulation, development and manufacture of custom dietary supplements. GSN also has an international reputation, supplying dietary supplements to more than 35 countries around the world. GSN is one of a select group of manufacturers to have received certification and approval from Australia’s Therapeutic Goods Administration (TGA). As dietary supplements for the Australian market must be manufactured to pharmaceutical standards, TGA approval is the ultimate confirmation of superior quality.

Garden State takes pride in their ability to innovate, creating more than 2000 new products every year. GSN is one of the largest custom contract manufacturers of nutritional supplements in the United States. In addition to GSN’s own highly skilled Product Development group, the company also maintains a Scientific Advisory Board. This multidisciplinary team includes leading research scientists, molecular biologists, physicians, pharmacists, clinical nutritionists, herbalists, food technologists, and sports professionals.
physiologists.

GSN's FDA-inspected facility operates under strict Good Manufacturing Practices (GMP). Their kosher-approved facilities have been audited and approved by leading independent bodies as well.

From raw material analysis to final product inspection, every production step is carefully monitored and documented, with full accountability and in-process controls. GSN's ongoing commitment to superior quality is backed up by rigorous analysis of products in our own in-house testing laboratories.

The Quality Control/Analytical Development Department of GSN consists of a highly trained staff of 15 degree chemists under the supervision of our resident Ph.D. The department performs testing and inspection pertaining to the approval and release of all incoming raw materials and finished products.

GSN’s Quality Assurance Department has broad responsibilities and authority in the following areas:

- Quality Improvement — Quality improvement is based on the premise that all work activities can be planned, performed, measured, and improved.
- Personnel GMP Training and Qualification — all employees who come into contact with products must begin GMP training within the first month of employment. GMP training continues on a regular basis throughout the length of employment. Tests are given to monitor the effectiveness of training.
- Internal Audits — QA inspectors monitor all phases of production to assess performance and adherence to GMP and to the SOPs of each department.
- External Audits — QA oversees and supervises inspections and audits of facilities by domestic and international regulatory bodies, as well as by customers and independent auditing firms.
- Supplier Qualification — GSN maintains an audit program to verify suppliers’ ability to provide consistent products that meet strict quality requirements.
- Document and Record Control — QA is responsible for maintaining all documents, records and Standard Operating Procedures, making sure that they are up to date.
- Inspection and Acceptance Testing — QA has the authority to release and reject any component or finished product that does not meet specifications.
- Non-Conformances — QA handles the identification, documentation, control, investigation and disposition of all non-conforming materials, components and final products.

GSN’s laboratory equipment and capabilities include:

- Chemical Analysis (guarantees label claims for potency)
  - Fourier Transform Infrared (FT-IR) and Near Infrared (N-IR) Spectrometers — for positive identification fingerprinting of incoming raw materials.
  - High Performance Liquid Chromatography (HPLC) — for accurate quantitative analysis of vitamins, amino acids and botanical actives. The 7 Waters HPLC Instruments are all interfaced to a Millennium 32 Client/Server System for seamless data integration.
  - Perkin-Elmer Inductively Coupled Plasma Emission Spectrometer (ICP) — for precise analysis of nutrient minerals and heavy metals.
- Physical Analysis (guarantees consistency and uniformity)
  - Physical testing equipment determines tablet weight, hardness, thickness, and friability, as well as tap density and particle size of powders.
- Microbiological Analysis (guarantees purity)
  - A complete Microbiology Lab guarantees that raw materials and finished products comply with strict USP requirements.
- Stability Analysis (guarantees shelf life)
  - Accelerated shelf-stability testing is performed in a range of humidified and non-humidified chambers.

GSN is a fully compliant GMP manufacturing and packaging facility. The company is duly licensed and
regularly inspected by State and Federal health authorities. Additionally, GSN undergoes frequent GMP audits by their clients, who confirm our GMP compliance either with their own teams or by engaging independent auditors.

Regulatory Assistance
Since the passage of the Dietary Supplements Health and Education Act in 1994, regulatory compliance has become increasingly complex. The Regulatory Affairs and Information Services team offers the following services:

- Full label review - ensures accuracy and regulatory compliance
- International registration assistance
- Formula modifications — to adapt to the requirements of each country
- Full-time Health Canada consultant — to keep pace with the rapidly changing regulatory environment
- Full service testing, including microbiological and stability studies

QUALITY CONTROL LABORATORY

SERVICES AND CAPABILITIES

The GSN Quality Control Laboratory performs analytical testing of raw materials, in-process samples, and finished goods in a cGMP/GLP compliant facility.

CHEMISTRY CAPABILITIES

- Methods
  - USP/NF, BP, AOAC, in-house, and client supplied methods are utilized.

- Tests Performed
  - Vitamin and Dietary Supplement Assays
  - Dissolution and Disintegration according to USP and compendia procedures.
  - Elemental analysis of minerals
  - Physical Testing including Partial Size, Friability, Hardness, and Weight Variation.
  - Moisture analysis via Loss on Drying and Karl Fischer techniques.
  - Identification via spectroscopy
  - Wet Chemical Analysis
  - Organic Volatile Impurities (OVI)
  - Pesticides Analysis
  - Heavy Metals Testing for various Regulatory Compliance

- Instrumentation
  - HPLC / UPLC systems equipped with UV/VIS, PDA, RI, and ELSD detectors.
  - UPLC/MS/MS system with ESI and APCI modes.
  - GC system with PID,FID, ECD, detection and headspace auto sampling.
  - FTIR and NIR spectroscopy systems
  - ICP/MS – inductively coupled plasma spectroscopy
  - Automated Disintegration and Dissolution apparatus
  - Automated Titration equipment
  - Automated Moisture Determination equipment

MICROBIOLOGY CAPABILITIES

- Methods
  - USP/NF, BP, AOAC, FDA-BAM, and client supplied methods are utilized.
• Tests Performed
  • Microbial Limits
  • Probiotic Assays
  • Antimicrobial Effectiveness Testing (AEI)
  • Tests for Specified Organisms
  • Water and Environmental Monitoring

• Instrumentation
  • Viteck automated Microbial Identification System
  • Tempo automated Microbial Assay system

ADDITIONAL LABORATORY SERVICES

• Stability Testing according to ICH guidelines and customized storage conditions.
• Method Development and Validation
• Technology transfer of analytical methodology.

FACILITY AND STAFF

• State-of-the-Art laboratory staffed with 20+ highly qualified professionals all with extensive industry experience.
• Integrated LIMS system

Bakery Barn
Manufacturer of Protein Sticks, Breakfast Bars, Meal Replacement Bars and Treats for dotFIT.

During the production process, a sample unit is pulled from the packaging line every hour. All the collected bars are sent to an independent lab for microbiological testing. Bakery Barn (BBI) currently utilizes two independent labs for microbiological testing, Microbac Labs and Eurofins Labs.

Bakery Barn uses a very strict standard of 10,000 or under for an acceptable measuring for Aerobic Plate Count. There is no “industry standard”, “safe”, or “unsafe” level of Aerobic Plate Count; it is simply a measure.

BBI maintains an extensive “Retains” program where random samples selected throughout the day for every lot are retained on site for a minimum of 90 days after the expiration date of the lot. In the event of a broad range of situations ranging from a major ingredient recall to a consumer question regarding the pattern of icing on a particular product, we can pull actual samples from the same lot for further examination and/or testing.
This information is educational material for dotFIT certified fitness professionals. This literature is not to be used to imply that dotFIT products may diagnose, treat, cure or prevent any disease.