

Practitioner Dietary Supplement Reference Guide

Women'sMV – Multivitamin & Mineral Formula

Introduction

Because of healthy reproduction, lifelong vitamin and mineral supplementation is most important to the female

Ages 18-50 yrs Continuing Vitamin and Essential Mineral Supplementation for Women

All humans require the same vitamins and essential minerals (VM) to create, develop and maintain life.¹ The differences are the amounts necessary for proper health and development during different life phases² (see Appendix and Table 1), which varies little after ages 14-18 years.^{2,3} However, from the beginning of life (including the prenatal period) through the “early adolescent” growth and development period, there are significant differences in the required amounts of VM with the greatest adjustments taking place from birth to approximately age 12 years, which the KidsMV satisfies through age 11 years.^{2,3*} Mindful that the ActiveMV at one tablet (1) per day picks up where the KidsMV leaves off to correct the known vitamin and mineral gaps left from food alone to reach the proposed best vitamin and mineral safety and efficacy range described as: an amount from the vitamin and mineral Recommended Daily Allowances (RDAs) or Adequate Intakes (AIs), when RDAs are unknown, up to below the tolerable Upper Limits [ULs] or No Observed Adverse Effect Levels (NOAEL) when known, for both healthy boys and girls from age 12-17 years.^{2,3,4,5} For more on vitamins and minerals including supplementation in human health, the reader's is referred the article titled “*Vitamin and Mineral Supplementation in Human Health – A Case for Public Policy.*”⁶

Next Female Age Vitamin and Mineral Supplementation Adjustment

At 18 years of age based on size and/or activity, women (and men) would switch to two (2) ActiveMVs daily if consistently vigorously active. Recreationally or typically active females begin the Women'sMV formula, as described here in this document, at (one) 1 per day to achieve the same correction.

* A complete listing of Dietary Reference Intakes (DRIs) known for all gender and age groups including Recommended Dietary Allowances (RDAs) is available [here](#)

Note on Use of Active or Women's Formulas

Body size and activity Increase Vitamin and Mineral Usage

Larger bodies have the potential to use more VM than smaller ones, especially if the extra size is primarily fat free mass (FFM) such as the general differences between men and women including athletes,⁷ and becomes a rationale for slightly higher recommendations for some VM for men than women.² All else equal, activity increases the daily use of VM. In other words, in two physically similar humans, one significantly more active than the other, the former will use more VM to support the extra activity (e.g. energy production, movements, etc.) and recovery (e.g. muscle/cellular repair/synthesis/breakdown, glycogen restoration, etc.).^{8,9,10,11,12,13,14,15,16,17,18,19,20,21,22} A weak argument can be made that bigger and/or more active people consume more energy than their smaller, less active counterparts to support their size and activity and the extra food supplies their greater vitamin and mineral requirements. This is convenient thinking but an uneven solution since no matter size or activity differences, exercisers and athletes experience the same vitamin and mineral shortages as the general population when delivery is from food alone regardless of total calorie intake.^{11,12,23,24,25,26,27,28,29,30,31} This problem can be exacerbated in athletes and exercisers for multiple reasons:¹⁴ maintaining low body fat, dieting for any reasons including making weight classes as in combat sports, experimenting with popular diets such as vegan, intermittent fasting and ketogenic diets.^{10,11,12,13,15,23,24,25,26,27,28,29,30,32,33,34,35,36,37,38,39} And finally, more food of any type does not guarantee an even vitamin and mineral distribution to accurately fill all typical vitamin and mineral gaps.^{39,40,41}

Men are approximately 10% larger than females with often an even greater percentage difference of FFM compared with a female counterpart, justifying slightly more daily vitamin and mineral intake regardless of activity.^{2,7} Adding regular high volume exercise activity brings the female's vitamin and mineral needs within the range of the majority of larger males under 50 years of age and near the regularly more active males such as recreational/competitive athletes

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under 65 (mindful the safe and known recommended range for everyone is the RDA/AI through below the UL).^{42,43,44} At some point, size and activity matters less because aging slows down many vitamin and mineral dependent activities as eventually everyone loses size or performance production if they are long-term experienced exercisers/athletes – i.e. depending on the individual’s training/competition experience, there will come the inevitable age-related performance and size decline.^{45,46,47} This data becomes the rationale for vitamin and mineral supplemental amounts for very active people of both genders and most other males up to age 50. Less or normal active females including regular exercisers (~30-60 minutes of moderate activity, 3-6 days/week) with normal other daily activities, would use the vitamin and mineral amounts captured in the Women’s formula, which is appropriately adjusted with many vitamins and minerals slightly less than the total vitamin and mineral content in two (2) ActiveMV tablets. For more on general adaptation to adequate vitamin and mineral intake (RDA/AI through below the UL) versus less intake in humans, the reader is again referred to the full article titled *“Vitamin and Mineral Supplementation in Human Health – A Case for Public Policy.”*⁶

All dotFIT vitamin and mineral supplementation formulas consider: 1) recommended total vitamin and mineral intake (RDA/AI) for the designated life stage established by the Dietary Guidelines for Americans (DGA); 2) RDA/AI vitamin and mineral gaps when intake is from food alone (including fortified); 3) vitamin and essential mineral supplement safety range (mean food intake to UL) considering food intake; 4) proposed vitamin and mineral safe and recommended supplement range to close the micronutrient gaps between the RDA/AI and food to achieve the scientific consensus of recommended vitamin and mineral intakes to complement most any western food diet regardless of gender or age.

* A complete listing of Dietary Reference Intakes (DRIs) known for all gender and age groups including Recommended Dietary Allowances (RDAs) is available [here](#).

Goal

*Formula and dosing recommendation carry on from where the ActiveMV leaves off for typically active females at age 18 (highly active females will move to two (2) tablets of the ActiveMV daily until age 50 years unless otherwise noted including through software recommendation based on input.**

To continue to supply vitamins and minerals (VM) in amounts necessary to complement the vitamin and mineral content from typical female food intake to reach the established Dietary Reference Intakes (DRI) that promotes proper growth, development and good health in women ages 18-50 years. This formula considers food intake compared to the RDA and AI vitamin and mineral recommendations for best health, and supplies corrective amounts so that combined with diet, and other (if necessary*) supplement intake, keeps the designated user within the safe and DRI recommended vitamin and mineral range. The range is defined as starting close or equal to the female age group vitamin and mineral RDA/AI and ends below the UL or NOAEL. Most importantly, so virtually “no one is left behind,” this formula contains 19 vitamins and minerals, any of which are known to be potentially shorted when food alone is the delivery, so that the female’s vitamin and mineral needs are shored up within any typical U.S. diet, other than those minerals that cannot fit in an acceptable pill size* such as calcium and potassium. Along with other often under consumed vitamins and minerals, the DGA’s seven nutrients of concern (dietary fiber, choline, magnesium, calcium, and vitamins A, E, and C), except calcium and fiber (because of pill size), are contained within the Women’sMV in corrective amounts when added to known U.S. and other western nations food intake vitamin and mineral content. Finally, as described above, continuous vitamin and mineral supplementation from the beginning of life forward, may contribute to better daily recovery to help support a prolonged ability to perform desired activities as well as functional independence.

*For all persons of all ages: The amounts to correct food intake to meet the RDAs for calcium and potassium, generally would not fit in an acceptable pill size along with the other VM. While impossible to quantify/validate all the individual vitamin and mineral content of your foods (unless testing each food immediately before consumption), calcium and potassium food content are

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relatively easy to discover given the new labeling laws. Therefore, the standard adult formula would leave these two minerals out allowing persons to add separately only if needed, which a quick glance at one's diet can determine.

**Very active competitive athletes still participating in regular intense and extended training sessions*

Rationale

The rationale for lifelong vitamin and mineral supplementation (LCVMS) for all humans is detailed in the article titled: "Vitamin and Mineral Supplementation in Human Health – A Case for Public Policy, which is solely an education publication but serves as a basis for proper vitamin and mineral usage (and will be noted) throughout the entire PDSRG Health Section."⁶ For an overview of rationale for all ages and gender, the reader is referred to the article abstract and introduction. The article also discusses LCVMS rationale specific to activity, exercise, diet including related multivitamin and mineral use.⁶ Additionally, the activity of LCVMS helps solves the potential problems of late discovery of pregnancy where optimum first trimester fetal development is often dependent on maternal supplementation and there can be no later supplementation/diet "make up" once this window closes.

^{48,49,50,51,52,53,54,55,56} Below are additional rationale notes specific to female adults that supports the dotFIT Women'sMV formulation and recommendation.

Note: *current research using exercisers argues for VM to not just fill gaps,^{11,12,23,24,25,26,27} but glean the benefits related to not necessarily acute performance (unless existing deficiency is corrected),⁵⁷ but long-term and continued performance^{9,10,11,12,13,14,15,35} and especially Vitamin D.^{16,17,18} For exercisers (including first time or reengaging exercisers), in line with what can happen with LCVMS, as noted in the KidsMV section: if you fracture less, have fewer sick days, more energy, recover/heal quicker and miss less training/exercise sessions, gains accrue more consistently/faster allowing you the ability to play more often, and the healthy exercise addiction has a better chance of taking hold with the continuous (less interrupted) long-term gains.^{15,16}*

Women's Multivitamin and Mineral Formula

This formula was designed to address specific needs of non-pregnant adult females up to age 50.^{2,3} Most vitamin and mineral needs remain the same for males and females in this age group.² Special needs relate more to life stage (including pregnancy potential), diet type, activity level and body size as described and properly cited above. In reference to the latter, the DRIs for certain nutrients among women are slightly less than men.² Special needs generally include slightly higher levels of iron^{10,21,37,58,59,60,61} and other common dietary shortfalls more specific to women such as calcium, Vitamins A, C, and E, folate, choline, magnesium, fiber and Vitamin K.^{2,62,63,64,65} In support of this female age groups vitamin and mineral supplementation needs, Bailey et al. recently concluded that although nutrient intakes should preferably come from a variety of food sources, it is unlikely that pregnant women and those of childbearing age meet their needs for some nutrients through diet alone.⁶⁶ And Fofou-Caillierez, et al. captured the special need for adequate B12 for this population,⁶⁷ while Asemi et al., Taghizadeh et al. and others have found multivitamin mineral supplementation fares better than multivitamin alone supplementation in pregnancy outcomes.^{68,69,70} A systematic review of the available clinical study literature on women 18 years or older, identified the impact of essential fatty acids (EFAs), B vitamins, vitamin C, magnesium and/or zinc, consumed as dietary supplements to the daily diet, on female stress and anxiety levels.⁷¹ The authors concluded: "The review suggests that EFAs may be effective in reducing prenatal stress and salivary cortisol and may reduce anxiety during premenstrual syndrome and during menopause in the absence of depression. Magnesium and vitamin B6 may be effective in combination in reducing premenstrual stress, and vitamin B6 alone may reduce anxiety effectively in older women. High-dose sustained-release vitamin C may reduce anxiety and mitigate increased blood pressure in response to stress."⁷¹ This suggest an added benefit of daily use of a complete vitamin and mineral supplement for females. In support of continuous use of a complete vitamin and mineral supplement (CVMS), Bailey et.al. demonstrated that long term (>3 yrs) multivitamin and mineral use (as opposed to multivitamins alone) significantly improved cardiovascular health outcomes in women without a history of negative cardiovascular events.⁷² Long-term multivitamin use alone (>5yrs) has also been associated with supporting heart health in women. The longer the use, the better the outcomes.⁷³

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Based on the above potential special vitamin and mineral supplementation needs, mindful that most users would be of childbearing age and pregnancy is often unknown during the early first trimester, the Women's formula is designed to deliver these VM in proper bioavailable forms in amounts to complement typical female food intake and the dotFIT SuperCalcium formula for those not meeting calcium recommendations for bone health,⁷⁴ including the majority of females and approximately 50% of males.^{2,64,74}

Specialized/Unique Women'sMV Formula Considerations

All ingredients contained in the Women'sMV maintains the basic rules, described in the previous section, of filling vitamin and mineral gaps left from food considering in totality the typical western diet, gender and designated age.^{2,3,64,66,75} Additionally, this formula follows the same vitamin and mineral structural guidelines of all dotFIT MVM formulas (Vegan, Over50 and Active formula), in that the ingredient forms and dosages and their delivery, are consistent in what has been shown to be potentially more beneficial than what is contained in MVM products commonly found in consumer channels (see previous section "[dotFIT Multivitamin & Mineral Formulas Specialty Design Criteria](#)" for more). These improvements over mass produced MVM products for this population (described above) include:

- **Food intake consideration:** regardless of generally acceptable energy containing diet, the formula is designed to complement the adult female food intake vitamin and mineral content to reach recommended levels (RDA/AI to below the UL), and by design to make sure no one is left behind, meaning based on food alone intake, everyone is below the RDA on at least one but generally many more VM and the Women'sMV formula shores up those known gaps (wherever they may be) while also supplying the additional potential needs for this specific age, size and/or activity group as outlined above.^{2,3,5,11,12,31,62,63,64,65,66}
- **All around synergy:** maintain a synergistic relationship with all dotFIT health products and general age group food intake. Therefore, including diet, during multiple product use in any combination, users remain in the known safe and recommended vitamin and mineral range, which is from the ~RDA/AI to below the UL or NOAEL^{2,5,62,64,76,77} as previously noted. This synergy is especially necessary when dietary calcium intake requires supplementation to reach the recommended 1000 mgs/day, which is common in females.^{2,62,66,74,78} Supplemental calcium must also contain the necessary co-factors (e.g. magnesium, Vitamins D & K, etc.),^{4,79,80,81} which are also contained in a MVM, so that the calcium product has efficacy when used alone. However, when using both MVM and a calcium supplement, combined ingredients must all remain below the ULs. In other words, all products are based on the use of a dotFIT MVM to stay within the established safe and recommended nutrient range, but all supplements must also have standalone efficacy in case someone is not using the MVM.
- **Contains both important forms of vitamin K, K1 and K2:**^{82,83,84} K1 and K2 have similar and unique properties. K2 (menaquinone) has recently emerged as serving an important role in vascular and bone health.^{85,86,87} Low dietary vitamin K2 intake in children is associated with early onset poor bone health.⁸⁸ Calcium and vitamin D from food and supplements are complemented with vitamin K2 supplementation due to its increasingly recognized role as a "calcium chaperone" and the facilitator of vitamin K's cardiovascular system role in cardiac structure and function.^{84,87,89,90,91,92,93,94,95, 96,97,98}
- **Vitamin B12 in two forms:** methylcobalamin and cyanocobalamin. Both forms are important but methylcobalamin compared with other forms, is the most effective at being delivered to neurons to support brain health.^{99,100} Adequate intake of vitamin B12 is of special importance to women of child-bearing age and has recently been suggested to be increased.¹⁰¹ The 10mcg in the Women's formula satisfies this recommendation.
- **Magnesium as Mg citrate and oxide:** magnesium is involved in more than 300 biochemical reactions of the body,^{102,103} especially those that are involved in energy metabolism and neurotransmitter synthesis.¹⁰⁴ Aging is a major risk factor for magnesium deficiency.¹⁰⁵ Its total levels shrink due to a decrease in bone mass which is the

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most important magnesium source in the body.¹⁰⁶ Additionally, studies show magnesium dietary intake is inadequate in most population groups, especially middle and older adults.^{107,108,109,110,111} Low magnesium levels have been associated with weakness and sleep problems. In fact, magnesium supplementation in middle and younger older aged men and women has been shown to improve both performance and sleep suggesting low dietary intakes.^{106,112,113,114,115} Magnesium in this formula complements the typical female American diet to help achieve desired magnesium levels and when needed, work synergistically with the dotFIT SuperCalcium, which also contains magnesium, thus keeping total intake in the safe and recommended nutrient range.^{2,5,62,64,65,66,116} The magnesium in this formula is in both the oxide and citrate form for greater bioavailability compared to a single salt form.^{117,118}

- **Choline bitartrate:** rarely found in MVM,¹¹⁹ choline is now considered an essential nutrient for proper muscle, liver and brain functions, lipid metabolism and cellular membrane composition and repair.^{2,3,120} Depending on the age group, over 90% of Americans and populations of other modern western nations, have been found to be dangerously below the establish Adequate Intake (AI)^{2,121,122,123,124} and therefore choline is now listed as a nutrient of concern by the DGA,² meaning without correction, potential related health problems loom (e.g. shortages negatively impact cell structure, neurotransmitter synthesis/neurological disorders, liver health, cardiovascular system, etc.).^{120,125,126,127,128} Choline deficiency affects liver health because choline is required to form phosphatidylcholine present in very low-density lipoprotein particles.^{120,127,129} Because of choline's indispensable role in cellular structural development as described above, choline is especially important for women of child bearing age to support healthy pregnancy, lactation, and early child development.^{125,130,131} In this respect including this female age group, emerging findings illustrate synergistic interactions between choline and docosahexaenoic acid (DHA) in brain and eye health, indicating that insufficient intakes of one or both could have lifelong negative effects on both maternal and infant health.¹³² The women's formula includes 125mg of choline, to compliment dietary intakes and we always recommend 3-5 servings of fatty fish weekly or supplement the SuperOmega3 fish oils as needed.
- **Vitamin A:** 6,000 IU total comes in both preformed Vitamin A (retinol acetate) and provitamin A (beta-carotene) since they both metabolize differently with unique and mutual actions.¹³³ However, partially attributed to genetics and other uptake factors,^{134,135} there can be large interindividual differences in the ability to convert pro-vitamin A sources (e.g. alpha-carotene, beta-carotene, etc.) to the needed amount of vitamin A activity, known as retinol activity equivalents (RAE), therefore both forms can help offset the possibility of too much or too little vitamin A activity and potentially more accurately contribute to achieving the recommended levels.^{136,137,138} This amount of supplemental Vitamin A for the this female age group covered by the Women'sMV (18-50yrs) is based on most females' common dietary vitamin A insufficient intakes and necessary maternal and reproductive health potential.^{2,5,62,64,65,66,139}
- **Vitamin D3:** contains higher levels compared to other MVMs to not just shore up falling dietary vitamin D content from typical food intakes,^{2,5,9,31,32,63,64,65,66} but to also meet the newer progressive recommendation that goes beyond solely achieving needs established for bone health,¹⁴⁰ to reach vitamin D levels associated with improved overall health and recovery (≥ 75 nmol/L or >30 ng/mL)¹⁴¹ and especially for active exercisers including competitive athletes.^{14,15,16,17,18,142,143}

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Typical Use (Starting When the Youth ActiveMV Recommendation Ends)

Persons as described below who are not using a doctor recommended prenatal multivitamin and mineral formula, which they would otherwise use because they're planning to conceive or pregnant.

- Women 18-50 years old who are not using the ActiveMV (see ActiveMV criteria/software recommendation*):
 - Take one daily immediately following first food meal of the day

*Intense/competitive training female athletes 18-65 years (participating in daily extended training sessions and regularly controlled energy intakes)

For CVMS contraindications, precautions, etc., see previous section "[dotFIT Multivitamin & Mineral Formulas Specialty Design Criteria](#)" as there are no ingredients in the Women'sMV that reach the UL or NOAEL including when added to normal food intake.

Supplement Facts Panel

Supplement Facts		
Serving Size: 1 Tablet		
Servings Per Container: 60		
	Amount Per Serving	% Daily Value
Vitamin A (As beta carotene and as retinol acetate)	1800 mcg (6000 IU)	200%
Vitamin C (from ascorbic acid and calcium ascorbate)	250 mg	278%
Vitamin D3 (as cholecalciferol)	25 mcg (1000 IU)	125%
Vitamin E (as d-alpha tocopheryl succinate)	67 mg (100 IU)	447%
Vitamin K (as Vitamin K1 [phytonadione] and Vitamin K2 [menaquinone-7])	50 mcg	42%
Thiamin (as thiamine mononitrate)	6 mg	500%
Riboflavin (as riboflavin-5-phosphate sodium)	1.7 mg	131%
Niacin (as niacinamide)	20 mg	125%
Vitamin B6 (as pyridoxal-5-phosphate monohydrate)	2 mg	118%
Folate	680 mcg DFE (400 mcg folic acid)	170%
Vitamin B12 (as methylcobalamin)	10 mcg	417%
Biotin	100 mcg	333%
Pantothenic Acid (as d-calcium pantothenate)	15 mg	300%
Choline (from choline bitartrate)	150 mg	27%
Iron (from ferrous fumarate)	10 mg	56%
Iodine (from kelp)	100 mcg	67%
Magnesium (from magnesium oxide and magnesium citrate)	100 mg	24%
Zinc (from zinc citrate)	12 mg	109%
Selenium (from L-selenomethionine)	50 mcg	91%
Chromium (from chromium picolinate)	50 mcg	143%
Boron (from boron citrate)	1 mg	*

* Daily Value not established.

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