The Impact of Qualia Vitamin C+ on Blood Vitamin C Levels

SUMMARY

This is a randomized, double-blind, placebo-controlled, parallel-group, study evaluating the effect of a Qualia Vitamin C+ formulation on Whole Blood Vitamin C levels in the blood of healthy adults aged 25 years or older. Approximately 36 participants will be randomized to one of two study arms: Qualia Vitamin C+ or placebo. Each participant will take two capsules of their assigned product once daily in the morning, with or without food, over a 28-day period. The primary outcome is the change in blood vitamin C levels, assessed via in lab blood collection at baseline and study completion. Secondary endpoints include questionnaires measuring health-related cognitive functioning and stress (PROMIS Cognitive Function - Short Form 8a and the Perceived Stress Scale-10), the Single-item Assessment of Immune Fitness, evaluation of safety and tolerability, and an Overall Experience Questionnaire (Appendices 1, 4-7). All assessments, including electronic questionnaires, are completed remotely without in-person visits.

OUTCOMES

Primary Objective

To assess between-group differences in the change in blood Vitamin C levels from baseline to Day 28 following supplementation with Qualia Vitamin C+ versus placebo.

Secondary Objectives

To assess within-group and between-group differences in PROMIS Cognitive Function - Short Form 8a, Perceived Stress Scale-10 domain scores, and Single-item Assessment of Immune Fitness.

To assess within-group differences in the change in blood Vitamin C levels.

To evaluate side effect profiles using a custom Safety and Tolerability survey.

STRATIFICATION

Participants will be stratified by gender and age at screening before being randomly assigned in a 1:1 ratio to one of the two study arms (Qualia Vitamin C+ or placebo). Each participant will have an equal probability of receiving either Qualia Vitamin C+ or placebo.

STUDY DURATION

Subject Participant Duration: 28 days

NUMBER OF PARTICIPANTS

Number of Participants: Approximately 36 total (18 in each arm)

INTRODUCTION

Vitamin C, also known as ascorbic acid, is a water-soluble essential nutrient that plays a multifaceted role in human physiology. Unlike many animals, humans lack the enzyme L-gulonolactone oxidase needed to synthesize it endogenously, so we must obtain it through diet or supplementation.

The body relies on vitamin C for several crucial functions to maintain healthiness. It acts as a cofactor for several enzymatic reactions, such as the biosynthesis of collagen, synthesizing L-carnitine, a non-enzymatic and potent antioxidant, enhances non-heme iron absorption in the gut, and supports immune function through modulating white blood cell activity.

Although Vitamin C is associated with a number of important processes, humans require external sources of Vitamin C to maintain internal levels. Dietary intake is obtained through fruits and vegetables, but this method of consumption may fall short due to the modern diets high in processed foods, food insecurity, or limited access to fresh produce. Further, factors like smoking, chronic stress, infections, pollution, etc. can increase oxidative stress, thus reducing vitamin C levels.

In fact, a considerable number of children and adults in the United States are vitamin C deficient or depleted. The Third National Health and Nutrition Examination Survey categorized vitamin C levels according to internationally established limits: deficiency (less than 11 µmol/L), depletion (11–28 µmol/L), or normal (more than 28 µmol/L). Overall, 14% percent of males and 10% of

females were vitamin C deficient. Another 20% of males and 17% of females were found to be depleted in vitamin C.

Dietary supplementation with Vitamin C has been shown to enhance the body's antioxidant capabilities, support healthy immune functioning, cognition, stress resistance, and maintain Vitamin C stores in preclinical and early clinical studies. Furthermore, the combination of bioflavonoids may have an additive effect for supporting these functions. Qualia Vitamin C+ is a novel multi-ingredient formulation developed to enhance the body's Vitamin C reserves, decrease oxidative stress, support immune function, and promote systemic health. It contains a strategic blend of Vitamin C (from a blend of liposomal vitamin C, minerals ascorbates, and fruit extracts), bioflavonoids, and ferulic acid, designed to optimize vitamin C status and provide comprehensive support for metabolic processes underlying healthy responses to oxidative stress and immunity.

The primary aim of this randomized, double-blind, placebo-controlled parallel trial is to compare the effects of a Qualia Vitamin C+ formulation on blood Vitamin C levels in healthy adult participants over a 28-day intervention period. Secondary objectives include evaluating the impact of supplementation on cognition, stress, and immunity, as reflected by changes in scores on the PROMIS Cognitive Function - Short Form 8a, the Perceived Stress Scale-10, and the Single-item Assessment of Immune Fitness, as well as characterizing the safety and tolerability profile and overall participant experience of the formulation.

METHODS

Study Design

Design: Randomized Double-Blind Placebo-Controlled Parallel Trial (2 arms) with 1:1 allocation, stratified by gender and age.

Arms: (1) Qualia Vitamin C+, and (2) Placebo

Outcome Measures

Ulta Labs Vitamin C Test [Note: Should be done following an overnight fast. For more information see https://www.ultalabtests.com/test/vitamin-c-test]

PROMIS Cognitive Function - Short Form 8a

Perceived Stress Scale-10

Single-item Assessment of Immune Fitness

Adherence Check-In

Overall Experience Questionnaire

Safety and Tolerability Survey

Follow-Up Questionnaire

Assessment Procedures

All protocol-required laboratory tests will be ordered and funded by Qualia Life Sciences. Participants will not be responsible for any costs. Blood vitamin C levels will be measured via blood draws through Ulta Labs, which uses licensed blood draw centers operated by Quest Diagnostics. The Vitamin C test measures the concentration of ascorbic acid in the blood. It provides valuable information about a person's Vitamin C status, indicating whether they have sufficient levels of the vitamin, are deficient, depleted, or have normal levels. The test also helps monitor the effectiveness of supplementation. This test requires a 1 ml frozen serum sample. While the exact blood draw volume may vary slightly, labs typically collect between 2.5 and 5 ml of whole blood when 1 ml of serum is needed to ensure enough sample for testing and backup. We anticipate no more than 6 mL per visit, with a total blood volume not exceeding 12 mL over 5 weeks. These estimates are based on specimen requirements from Ulta Labs (when specified) and other similar laboratory services. The other measures include standardized electronic questionnaires (PROMIS Cognitive Function - Short Form 8a, Perceived Stress Scale-10, Single-item Assessment of Immune Fitness, Overall Experience Questionnaire, Safety and Tolerability, and adherence check-ins) will be administered through the Qualia Life Sciences survey platform. Laboratory Vitamin C test results will be securely transmitted from the testing laboratory via encrypted email in spreadsheet format, eliminating the need for manual data entry. Upon study completion, participants will receive their personal Vitamin C results; however, individualized interpretation will not be provided.

Inclusion / Exclusion Criteria

Inclusion criteria:

Provide voluntary, written, informed consent to participate in the study.

Agree to provide a valid cell phone number and are willing to receive communications through text.

Can read and write English.

Willing to complete questionnaires, records, and diaries associated with the study.
Healthy male and female participants aged 25 years or older.

Willing to go to an Ulta Labs Patient Service Center location for a Blood Vitamin C Test (baseline and Day 29) and located within a convenient distance of participating locations. [Note: The services offered by Ulta Lab Tests are available only in the United States and not to residents of the states of New Jersey, New York, and Rhode Island.]

Willing to avoid starting new or stopping any existing dietary supplements throughout the study.

Exclusion criteria:

Women who are pregnant, breastfeeding, or planning to become pregnant or start breastfeeding during the trial.

Known food intolerances/allergy to any ingredients in the product.

Having any of the following conditions: Psychiatric conditions, neurologic disorders, endocrine disorders, cancer.

Having had a significant cardiovascular event in the past 6 months.

Taking MAO inhibitors, SSRIs, or any other psychiatric or neurological medicines
On immunosuppressive therapy.

Adults lacking capacity to consent.

Participant Recruitment

Participants will be recruited via an online recruitment platform. Interested individuals will complete a prescreen survey to determine eligibility. The online recruitment platform will include a description of the purpose of the study and the prescreen survey, along with an explanation of how the information collected in the survey will be used and who will have access to it. Eligible participants will be contacted to discuss the intervention and obtain Institutional Review Board (IRB)-approved informed consent. Online consent will be obtained from all participants. Following consent, the supplement will be delivered to their specified address.

Randomization And Blinding

Participants will be randomized in a 1:1 ratio to one of two study groups: Qualia Vitamin C+ or placebo. To maintain double-blinding, a designated Qualia Life Sciences staff member independent of the research team will assign and label all study products as A or B. Both participants and study personnel will remain blinded to group assignments until study completion. Unblinding will occur only after all study data have been collected and finalized.

Study Product

Active Products: Qualia Vitamin C+

Placebo: Contains inert rice powder in a vegetable/cellulose capsule.

Dosage Instructions: Participants will take two capsules of their assigned product daily in the morning, with or without food, for 28 consecutive days.

Supply: Participants will receive a 28-day supply (56 capsules) of their assigned intervention.

Study Schedule

Days 1-28 are when participants will take the test formulas or placebo.

Screening (prior to enrollment (Day -21 to -15): Complete online prescreen questionnaire and provide electronic informed consent.

Baseline Assessments (Day -14 to -7):

1. Conduct Ulta Labs Vitamin C Test
2. Complete PROMIS Cognitive Function - Short Form 8a
3. Complete Perceived Stress Scale-10
4. Complete Single-item Assessment of Immune Fitness
5. Complete Safety and Tolerability survey

Note: Successful completion of baseline assessments and conformation of lab draw are required to ship a participant the study product.

Day 7 Assessments: Complete Safety and Tolerability survey.

Day 14 Assessments:

1. Complete PROMIS Cognitive Function - Short Form 8a
2. Complete Perceived Stress Scale-10
3. Complete Single-item Assessment of Immune Fitness
4. Complete Safety and Tolerability survey

Day 21 Assessments: Complete Safety and Tolerability survey.

Day 29 Assessments:

1. Conduct Ulta Labs Vitamin C Test
2. Complete PROMIS Cognitive Function - Short Form 8a
3. Complete Perceived Stress Scale-10
4. Complete Single-item Assessment of Immune Fitness

5. Complete Safety and Tolerability survey

Note: Participants should have blood drawn the day after their last supplement dose (ideally following an overnight fast and about 18–24 hours after their last dose of the supplement or placebo). This better reflects steady-state or trough plasma vitamin C, less influenced by the acute post-dose spike, and is the preferred approach in clinical and pharmacokinetic research to evaluate chronic supplementation effects, sustained tissue saturation, and baseline improvement. It is fine to have the participants complete the questionnaires on this same day (29) rather than day 28.

Follow-Up (Day 34-36): Complete post-study exit questionnaire.

Check-in Schedule: Day 1, 3, 7, 14, 21, 28

Note: Participants will complete regular check-in surveys to assess adherence and safety throughout the active supplementation period.

Subject Protection

Data will be securely stored on Qualia Life Sciences servers, accessible only to authorized personnel. Data analysis will be performed after the completion of the data collection period. Direct participant identifiers (such as name, contact information, etc.) will be replaced by a 10-digit code during data analysis, with the code key linking the data set to individually identifiable information stored separately.

Compensation

Participants will receive up to $300 in Qualia Life Sciences store credit: $125 for baseline blood test, $125 for end-of-intervention blood test, and a $50 bonus upon full completion.

Risk And Benefits

The potential risks and benefits of participating in this study will be fully explained to participants in their informed consent documentation. Risks include potential side effects from the product—nausea, diarrhea, bloating, headache, dizziness, increased anxiety, mood changes, itching, sexual dysfunction, and the possibility of drug-drug interactions—as well as the possibility of no improvement in blood Vitamin C levels or symptoms assessed by PROMIS Cognitive Function - Short Form 8a, the Perceived Stress Scale-10 measures, and Single-item

Assessment of Immune Fitness. Benefits include the potential for increased blood vitamin C levels, decreased oxidative stress, supporting the body's natural immune responses, and improvement in quality of life.

No adverse effects in human trial studies have been reported in the reviewed literature regarding the ingredients in the active product at the doses used in this study. It is extremely unlikely that participants will experience health complications due to dosage amount. If any adverse events occur, Greg Kelly, ND, will assess the appropriate treatment and action (e.g., seek medical treatment). Qualia Life Sciences is not able to offer financial compensation should a participant be injured as a result of participating in this research. However, participants are not precluded from seeking to collect compensation for injury related to malpractice, fault, or blame on the part of those involved in the research. This information is included in the consent form.

Statistical Methodology

Data will be assessed for normality using the Shapiro-Wilk test and by evaluating skewness and kurtosis. Descriptive statistics will be reported as mean (SD) for continuous variables and frequencies (percentages) for categorical variables. For each outcome, changes from baseline will be computed at subsequent time points, and paired t-tests or linear mixed-effects models will be used to evaluate within-group differences. Between-group comparisons will be conducted using linear mixed-effects models with fixed effects for group, time, and their interaction, and a random intercept for participants to account for repeated measures. Data that do not meet the assumptions of normality will be analyzed using appropriate non-parametric statistical tests. Estimated coefficients, 95% confidence intervals, and p-values for interaction terms will be extracted at each time point. Moderator variables will be considered in adjusted models. Analyses will be performed using Python (statsmodels). The sample size was estimated to yield 80% power to detect an effect size (Cohen's d = 0.80) with a two-tailed t-test at a 0.05 significance level.

Adverse Events

The participants will regularly be asked if they had experienced any uncomfortable problems or difficulties (i.e., adverse events). The participants will also be asked to notify the research staff immediately of any adverse events. Qualia Life Sciences will follow the standard guidance on reviewing and reporting on any unanticipated problems involving risk to subjects or other adverse events by assessing whether the adverse event is:

1. unexpected;
2. related or possibly related to participation in the research; and
3. serious or otherwise one that suggests that the research places subjects or others at a greater risk of physical or psychological harm than was previously known or recognized.

If Qualia Life Sciences determines that all three of the listed conditions are met, we will immediately inform the Institutional Review Board of the adverse event and related risks to research subjects or others.

Intended Use Of Study Data

De-identified, aggregated outcomes from this investigation may be used by Qualia Life Sciences to support peer-reviewed publications, posters or oral presentations at scientific and medical conferences, and marketing materials. No individual-level or personally identifiable information will appear in any external communication.

Monitoring Plan

Colin Gardner, PhD will serve as the PI for this project. Abhimanyu Ardagh will serve as the study coordinator. Greg Kelly, ND, William Scuba, and Sarah Blomquist, PhD, will serve as co-investigators. William Scuba will also serve as the statistician and data analyst. Lab meetings will be held as needed.

Research Team

Colin Gardner, PhD, will serve as Principal Investigator for this study and will oversee all aspects of the study from design, IRB approval, participant recruitment and retention, data collection and analysis, and dissemination of study findings.

Phone: 678-387-7924; Email: colin@qualialife.com

William Scuba will serve as co-PI for this study. He will assist with aspects of the study from design, IRB approval, participant recruitment and retention, data collection and analysis, and dissemination of the study findings.

Phone: 619-704-7099; Email: bill@qualialife.com

Sarah Blomquist, PhD, will serve as co-PI for this study. Dr. Blomquist will assist with participant recruitment and retention, data collection and analysis, and dissemination of the study findings.

Phone: 520-878-3882; Email: sblomq@qualialife.com

Abhimanyu Ardagh will serve as the study coordinator for this study. He will help with participant recruitment, retention, data collection, entry, and analysis, as well as manuscript preparation. Mr. Ardagh will ensure the integrity of the study and will be involved in all aspects of the study.

Contact Information: Phone: 530-263-4469; Email: abhi@qualialife.com

Greg Kelly, ND, will serve as the healthcare professional on this trial. He will assist with reviewing potential participants to determine eligibility. He will also monitor for adverse events.

Phone: 805-746-6299; Email: greg@qualialife.com

Appendices

Appendix 1: Safety and Tolerability

Have you experienced any of the following while taking this product?

1. Increased anxiety/ worry
    a. a great deal
    b. a lot
    c. a moderate amount
    d. a little
    e. not at all

2. Headache
    a. a great deal
    b. a lot
    c. a moderate amount
    d. a little
    e. not at all

3. Mood changes (e.g., anxiety, depression, irritability)
    a. a great deal
    b. a lot
    c. a moderate amount
    d. a little
    e. not at all

4. Stomach upset/ nausea
    a. a great deal
    b. a lot
    c. a moderate amount
    d. a little
    e. not at all

5. Dizziness
    a. a great deal
    b. a lot
    c. a moderate amount
    d. a little
    e. not at all

6. Bloating
    a. a great deal
    b. a lot
    c. a moderate amount

d. a little
e. not at all

7. Itching
   a. a great deal
   b. a lot
   c. a moderate amount
   d. a little
   e. not at all

8. Sexual dysfunction
   a. a great deal
   b. a lot
   c. a moderate amount
   d. a little
   e. not at all

9. Any comments or other undesirable effects?

Appendix 2: Check-in

1. How many days this week (past 7 days) did you take the product?
2. How many capsules did you usually take each day?
3. What time during the day did you usually take the product?
4. Did you usually take the product with an empty or full stomach?
5. Have you noticed any side effects from taking the product?
6. Is there anything you would like to say?

Appendix 3: Health Screening Questionnaire

Please answer all questions on this form (answer n/a where not applicable). Please do not leave blanks on the form.

Personal Details

Name: _____

Email Address:_____

Address: _____

Mobile Number: _____

Date of Birth: _____

Occupation: _____

Height: _____

Weight: _____

Ethnicity: _____

Gender: _____

Age: _____

Health and Medical History

1. Are you currently taking any prescription or over-the-counter medications, not including vitamins or herbal supplements? □ Yes □ No
   If yes, please list: _____

2. Are you currently taking any prescription psychiatric or neurologic medication (including MAO inhibitors or SSRIs)?

   Examples: phenelzine, tranylcypromine, sertraline, fluoxetine, lithium, valproate, carbamazepine.

   ☐ Yes ☐ No

3. Are you currently on immunosuppressive therapy?

   Examples: Calcineurin inhibitors, mTOR inhibitors, Antimetabolites (antiproliferatives), Corticosteroids, Alkylating agents (cytotoxic immunosuppressants), Biologic agents (monoclonal antibodies & fusion proteins).

   ☐ Yes ☐ No

4. Do you have any known food allergies or intolerances? □ Yes □ No
   If yes, please specify: _____

5. Do you have any of the following medical conditions? (check all that apply)
   □ Psychiatric conditions (e.g., depression, anxiety, bipolar disorder)
   □ Neurologic disorders (e.g., epilepsy, seizure disorders, Parkinson's disease, multiple sclerosis)
   □ Endocrine disorders (e.g., diabetes, thyroid disorders, adrenal disorders)
   □ Cancer (active, under treatment, or treated within the past 5 years)

6. Have you experienced a significant cardiovascular event in the past 6 months (e.g., heart attack, stroke, coronary bypass, angioplasty)? □ Yes □ No

7. Are you pregnant, planning to become pregnant, or currently breastfeeding? □ Yes □ No

8. Please use the space below for any other health information you believe is relevant:

Appendix 4: Overall Experience Questionnaire

Background

These questions are intended to capture information that may be used for product evaluation and marketing and will be asked 5-7 days after the final dose of the test product.

Questions and Answers

1. What was your overall experience of the product, keeping in mind the intended primary use is to promote healthy Vitamin C levels?
    a. Excellent
    b. Good
    c. No effect
    d. Poor
    e. Very poor

2. How would you rate the product ?
    a. 5 stars
    b. 4 stars
    c. 3 stars
    d. 2 stars
    e. 1 star

3. Is this a product you'd be interested in purchasing?
    a. Yes
    b. Maybe
    c. No

4. Please describe your experience with this product.

Note: this will be a text box

5. Please give the review of your experience a several word title.

Note: this will be a text box

6. While taking this, did you come in contact with someone who had a cold, the flu, or other contagious respiratory infections?
    a. Yes
    b. No

7. If you answered yes to the question above, did you become sick after being in contact with the person?
    a. Yes
    b. No
    c. N/A

8. Do you think your capacity to respond to circumstances that challenge the immune system (such as being around people with colds or flu, travel, lack of sleep, etc.) was improved while you were taking this product?
    d. Yes
    e. No

Scoring

Each question will be evaluated individually.

An average will be produced for the responses to question 2.

Appendix 5: PROMIS Cognitive Function v2.0 - Short Form 8a

Background

Patient-Reported Outcomes Measurement Information System (PROMIS) is a system of questionnaires developed by the National Institutes of Health (NIH) to create reliable and precise measures of patient-reported health status. The Cognitive Function It assesses a person's health through a series of questions about what they can do and how they feel. The four-, six -, and eight-item short form of the PROMIS® v2.0 Cognitive Function scale v2.0 - Short Form 8a assess subjective cognitive functioning. This scale has strong internal consistency reliability, supporting its use as a reliable measure of subjective cognitive functioning.1

Questions and Answers

Please respond to each question based on your experience in the past 7 days. Mark one box per row, using the following scale: 5 = Never, 4 = Rarely (Once), 3 = Sometimes (Two or three times), 2 = Often (About once a day), 1 = Very often (Several times a day)

1. My thinking has been slow.

2. It has seemed like my brain was not working as well as usual.

3. I have had to work harder than usual to keep track of what I was doing.

4. I have had trouble shifting back and forth between different activities that require thinking.

5. I have had trouble concentrating.

6. I have had to work really hard to pay attention or I would make a mistake.

7. I have had trouble forming thoughts.

8. I have had trouble adding or subtracting numbers in my head.

Scoring Instructions

The scoring manual for is available at https://www.healthmeasures.net/images/PROMIS/manuals/Scoring_Manual_Only/PROMIS_Cognitive_Function_Scoring_Manual_17Mar2022.pdf

Each response is scored on a 5-point scale:
- Never = 5
- Rarely = 4
- Sometimes = 3
- Often = 2
- Very often = 1

Step 1: Assign each response the appropriate score.
Step 2: Sum the scores across all 8 items to calculate the Raw Score. The minimum possible raw score is 8 and the maximum possible raw score is 40.

Step 3: Use the conversion table below to translate the Raw Score into a T-score and Standard Error (SE).

Adult v2.0 – Cognitive Function 8a Short Form Conversion Table

Raw Score	T-Score	Standard Error (SE)
8	23.27	4.36
9	26.59	3.47
10	28.63	3.13
11	30.23	2.93
12	31.63	2.76
13	32.87	2.64
14	34.01	2.56
15	35.07	2.51
16	36.07	2.48
17	37.04	2.46
18	37.97	2.45
19	38.9	2.44
20	39.81	2.44
21	40.71	2.44
22	41.61	2.45
23	42.51	2.46
24	43.42	2.46
25	44.34	2.48
26	45.27	2.49
27	46.21	2.5

28	47.18	2.52
29	48.16	2.53
30	49.17	2.55
31	50.21	2.56
32	51.29	2.59
33	52.42	2.63
34	53.63	2.68
35	54.94	2.78
36	56.39	2.93
37	58.03	3.14
38	59.95	3.41
39	62.52	3.9
40	67.09	5.24

Appendix 6: Perceived Stress Scale 10 (PSS-10)

Background

Since Vitamin C and Bioflavonoid consumption is associated with reduced stress/improved mood, using a validated questionnaire to assess stress will be essential. The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress. The original version has 14 questions. The 10-item version is also widely used (and is below). It is a measure of the degree to which situations in one's life are appraised as stressful, with questions designed to tap into how unpredictable, uncontrollable, and overloaded respondents find their lives. Because levels of appraised stress should be influenced by daily hassles, major events, and changes in coping resources, predictive validity of the PSS is expected to fall off rapidly after four to eight weeks. The psychometric validations have all been on a 4 week recall (e.g., In the last month, how often have you been upset because of something that happened unexpectedly?). According to this resource, making the recall period shorter is not expected to be a problem. So, I'd recommend changing the recall period to 1 week.2-5

INSTRUCTIONS: The questions in this scale ask you about your feelings and thoughts during the last week. Indicate how often you felt or thought a certain way.

Questions and Answers

1. In the last week, how often have you been upset because of something that happened unexpectedly?
2. In the last week, how often have you felt that you were unable to control the important things in your life?
3. In the last week, how often have you felt nervous and “stressed”?
4. In the last week, how often have you felt confident about your ability to handle your personal problems?
5. In the last week, how often have you felt that things were going your way?
6. In the last week, how often have you found that you could not cope with all the things that you had to do?
7. In the last week, how often have you been able to control irritations in your life?
8. In the last week, how often have you felt that you were on top of things?
9. In the last week, how often have you been angered because of things that were outside of your control?
10. In the last week, how often have you felt difficulties were piling up so high that you could not overcome them?

Answers: Never; Almost Never; Sometimes; Fairly Often; Very Often

Scoring

PSS scores are obtained by using the following scoring for questions 1-3, 6, 9 & 10: Never = 0; Almost Never = 1; Sometimes = 2; Fairly Often = 3; Very Often = 4.

For the four positively stated items (items 4, 5, 7, & 8) use reverse scoring (e.g., Never = 4, Almost Never = 3, Sometimes = 2, Fairly Often = 1 & Very Often = 0). Scores are summed to get a total score.

Norm Table for the PSS 10 item inventory based on L. Harris Poll gathered information on 2,387 respondents in the U.S.

By Gender

- Male = 12.1
- Female = 13.7

By Age

- 18-29 = 14.2
- 30-44 = 13.0
- 45-54 = 12.6
- 55-64 = 11.9
- 65 & older = 12.0

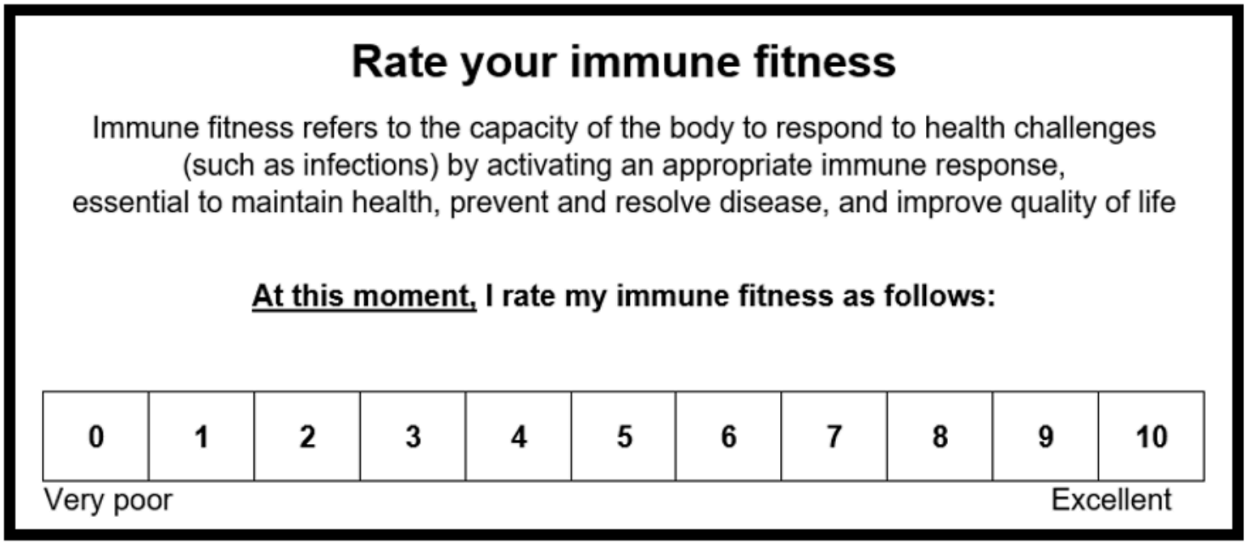
Appendix 7: Single-Item Assessment of Immune Fitness

Background

Vitamin C status impacts immune system function, an assessment of immune fitness is warranted. The assessment of momentary and retrospective immune fitness can be conducted using a single-item patient-reported outcome measure. This single-item assessment of immune fitness was first used in 2015 in survey research conducted at Utrecht University in the Netherlands. The measure has been used subsequently in a number of studies. The single-item approach provides a global assessment that evaluates the entire constellation of immune fitness, regardless of the individual components contributing to it, in terms of the presence of immune-related complaints, their severity, and their impact.6

Questions and Answers

Note: Q&A should look like the below image.



Scoring

A single numerical score between 0 and 10 is produced from the answer, with higher scores indicating better self-rated immune fitness.

References

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