

OJ Research and Messaging:

Focus on Immunity

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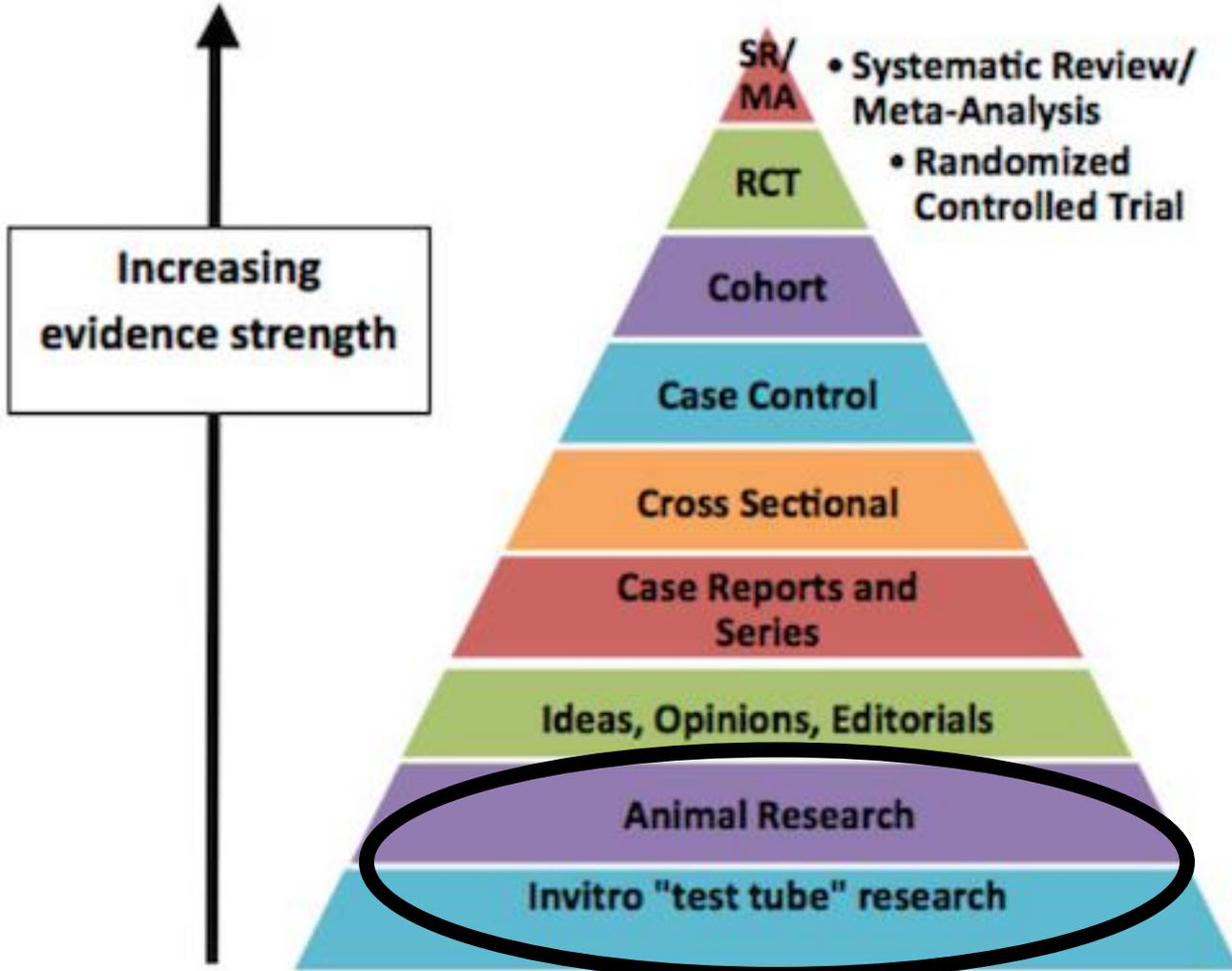




Research Review and Update



Nutrition Research Pyramid

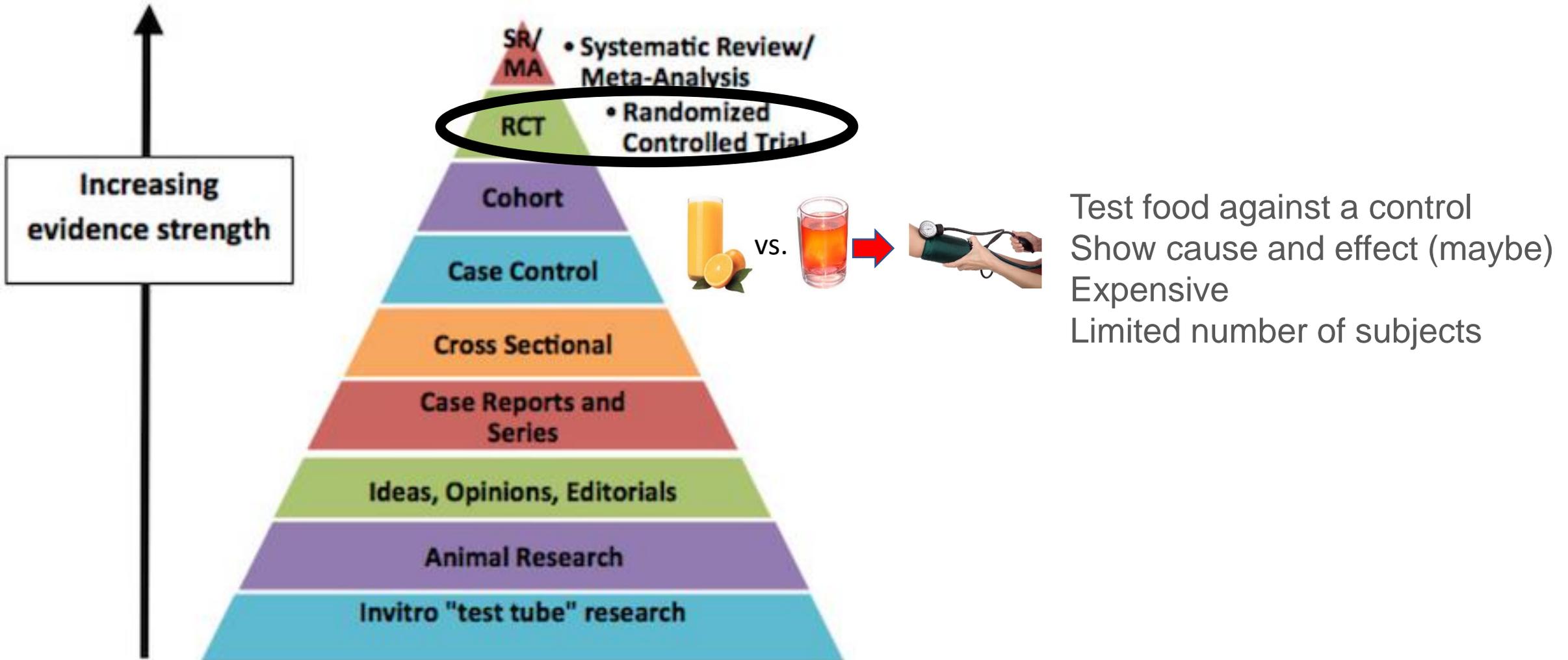


Relatively quick and inexpensive
Doesn't necessarily mimic the human body

Nutrition Research Pyramid



Nutrition Research Pyramid



Nutrition Research Pyramid



Current Observational Research

- NHANES analysis of OJ and association with body weight and diet quality in adults and children (University of Washington)
- NHANES analysis of trends over time relating to OJ and nutrient adequacy in adults and children (Nutrition Impact, LLC)
- Longitudinal analysis of OJ as related to weight, health, activity and diet quality in children (University of Connecticut)
- Systematic review of hesperidin as delivered by OJ and various health benefits (University of Florida)
- Systematic review of OJ and oxidative stress/inflammation (George Mason University, Tufts)



**Nutrient
Whole Food
Diet**

Nutrient-Dense 100% Orange Juice

Excellent Source

Vitamin C
Calcium (fortified)

Good Source

Potassium
Folate
Thiamin
Vitamin D (fortified)

Lesser Amounts (<10% Daily Value)

Magnesium
Vitamin B6
Riboflavin
Niacin
Vitamin A

Phytonutrients:

Flavonoids
Hesperidin
Naringin

Carotenoids:

Beta-carotene
Alpha-carotene
Beta-cryptoxanthin
Lutein
Zeaxanthin



**8 oz.
serving**

Research Supporting 100% OJ



Heart Health



**No Association
With Weight Gain**



Brain Health



**Hydration and
Rehydration
after Workouts**



Blood Sugar

Research Supporting OJ in the Diet



- OJ drinkers have higher diet quality and increased levels of key nutrients
- Results of additional studies with the newer NHANES datasets in this area are coming soon that support past findings
- Promote overall healthy food choices and OJ has a place in the diet



Vitamin C
OJ
Immunity

Vitamin C's Role in the Body

- **Antioxidant**
- **Helps Form**
 - Neurotransmitters
 - Hormones
- **Conversion of food to energy**
- **Immune System**
 - Collagen formation (skin is first line of immunity defense)
 - Promotes production and function of various types of immune cells
 - Assists with specific types of white blood cells to enhance their actions



Vitamin C and Immunity

- Decades of research
- Many studies done with supplements and large doses
- Habitual supplementation prior to illness may reduce the severity or duration of colds
- Doses in studies were 200 to 1000mg+
- Intravenous vitamin C may help in treating infections/viruses



~100mg of Vitamin C

What about OJ?

- **FDOC-Funded Study (Perche 2014)**
 - Specifically examined OJ effects on various immune markers
 - 24 Well-nourished and healthy men, average age 56 years
 - 500 mL (about 16 ounces) OJ/day, placebo, or placebo + hesperidin capsule for 4 weeks
 - Subjects' immune systems were not activated or challenged in this study
 - Found **NO EFFECTS on immune cells and activity** in any group
- **Brazil Study (Dourado 2015)**
 - 21 Normal and 25 overweight otherwise healthy men and women, age 23-59 years
 - 750 mL (about 24 ounces) OJ/day for 8 weeks
 - Subjects' immune systems were not activated or challenged in this study
 - Increase in Interleukin-12 (IL-12) which could **potentially stimulate immune response**

Perche O, et al. *Clinical Nutrition*. 2014;33:130-135.

Dourado GK, Cesar TB. *Food Nutr Res*. 2015;59:28147.

Health Claims and Research Evidence

- No FDA approved health claim for vitamin C and immunity
- European Food Safety Authority (EFSA) officially recognized that vitamin C contributes to the normal function of the immune system in the general population (approved health claim)
- Research Evidence
 - Research evidence high for vitamin C and immunity
 - Research evidence very low for OJ and immunity
 - Our messaging on immunity must reflect the current science

Science We Leverage

- Vitamin C's importance in supporting immune function
- Vitamin C is water-soluble, and we need it on a daily basis
- Immune system is complex and relies on optimal amounts of many nutrients that play complementary roles
- Hydration is important during illness and recovery
- Consumers identify OJ as a key source of vitamin C

KEY MESSAGE: Drink 100% orange juice throughout the year to continually support your immune system



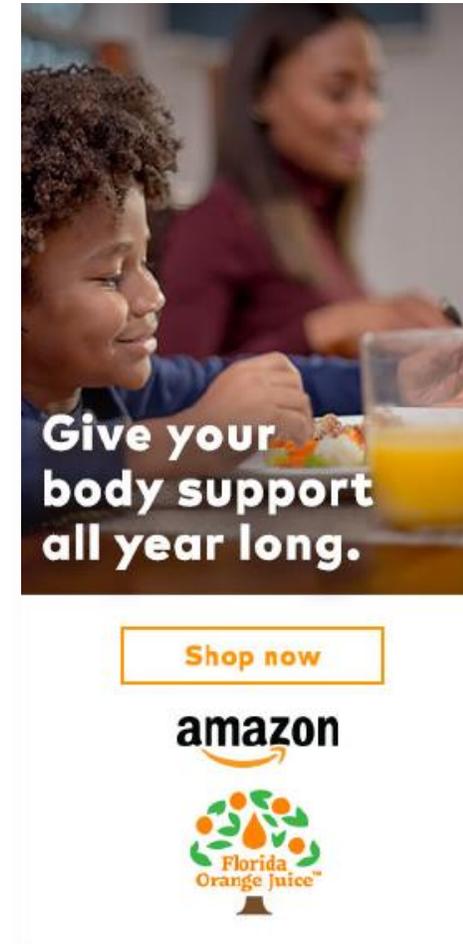
 **Florida Orange Juice**
Sponsored · 🌐

Help your immune system stay strong all year long by powering it with the essential nutrients found in Florida Orange Juice.

Your ultimate Vitamin C ally.

FLORIDACITRUS.ORG
Vitamin C in Every Glass 🍊

[Shop Now](#)



Give your body support all year long.

[Shop now](#)





Key Message: 100% orange juice contains a unique package of nutrients to help support your immune system



 **Florida Orange Juice**
Sponsored · 

Support your immune system by powering it with nutrients like vitamin C, folate, and thiamin found in 100% Orange Juice.

Recovery starts with the right nutrients.

FLORIDACITRUS.ORG
Power Up With Nutrients 🍊

[Shop Now](#)

Key Message: 100% orange juice can help you stay hydrated throughout cold and flu season



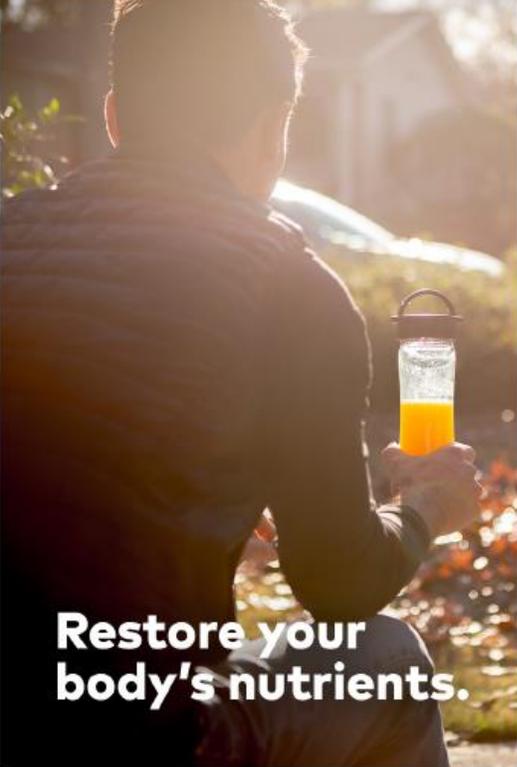
Hydration is key to recovery.

[Shop now](#)

amazon



Florida Orange Juice™



Save Like Send ...

Restore your body's nutrients.

Saved from Florida Orange Juice Visit

Get more Pins from Florida Orange... Follow



**Moving
Forward**

SRD is working for you

- Daily literature searches
- Monitoring media coverage of science
- Ongoing project updates
- Press releases: global marketing
- Juice Products Association
- International Life Sciences Institute, North America
- Communicating with Health professionals
- Engaged with policy-making

Recent publications

- **University of Kansas exercise study (Kelly 2020)**
 - FDOC funded
 - Randomized controlled trial in 26 young adults
 - Compared palatability, hydration, thirst, and GI effects of 100% OJ, sports drink, and water post-exercise (cycling)
 - OJ was just as effective as other beverages and a viable option to water or a sports drink for post-exercise rehydration

- **United Kingdom Biobank cohort study (Anderson 2020)**
 - Almost 200,000 participants, age 40-69 at baseline
 - 100% fruit/vegetable juice consumers did not have higher body mass index in spite of higher intakes of energy, sugar, or fat
 - Higher intake of 100% fruit/vegetable juice associated with lower risk for all-cause mortality

Kelly MR et al. *J Nutr Health Sci.* 2020;7(1): 101.

Anderson JJ et al. *BMC Med.* 2020;18(1):97.

Recent publications

- **Dutch EPIC cohort study (Scheffers 2020)**
 - Over 36,000 adult participants, age 20-69 at baseline
 - Consumption of 100% fruit juice not associated with risk for type 2 diabetes after ~14 years of follow up
 - Fruit juice drinkers had healthier dietary habits
- **Canadian schoolchildren (Eny 2020)**
 - 1778 children age 3-6 years
 - 100% fruit juice not associated with negative impacts on blood glucose or cardiometabolic risk score (a score consisting of systolic blood pressure, waist circumference, high-density lipoprotein cholesterol, triglycerides, and glucose)

Scheffers FR et al. *J Nutr.* 2020 Jan 14. pii: nxz340.

Eny KM et al. *Prev Med Rep.* 2020;17:101054

Criteria for projects moving forward

- **Produce useful data/information to be leveraged by FDOC's Global Marketing Department in order to:**
 - Support nutritional and health benefits associated with OJ consumption
 - Counteract negative or inaccurate media coverage
 - Identify consumer/health trends
- **Support research studies to:**
 - Review and strengthen existing research
 - Fill gaps in existing research and literature
 - Support and advise nutrition policy as related to OJ

Summary

- Nutrition research is evolving, varied and not without challenges
- OJ provides nutrients to promote a positive role for OJ in supporting immunity and other benefits
- FDOC depends on research to develop and support strategies that encourage consumption and promote the positive aspects of drinking OJ
- FDOC must rely on strong science to remain a credible and trusted resource and to keep the conversation around OJ current, relevant, and engaging

Thank You

