Understanding ORAC for Immunity

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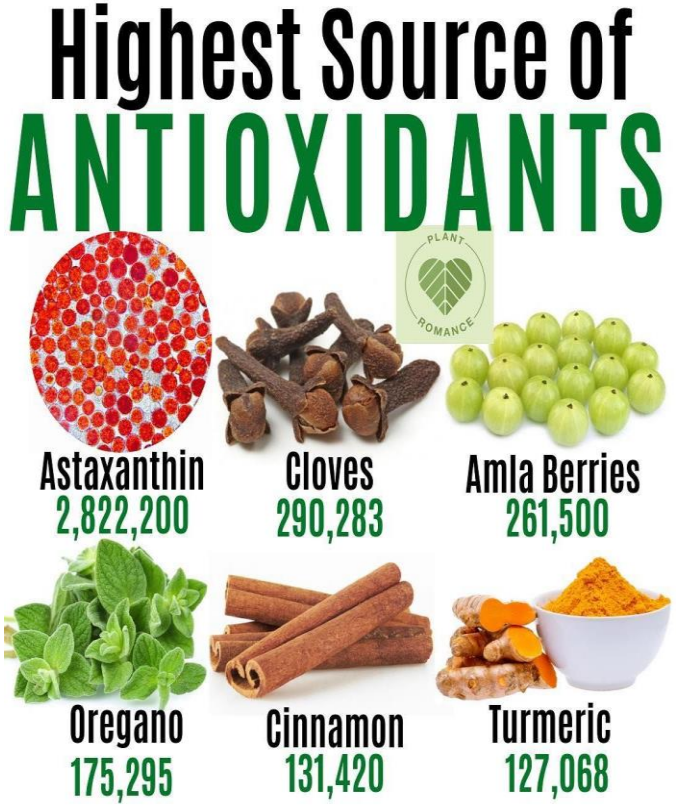


INTRODUCTION

ORAC stands for Oxygen Radical Absorbance Capacity. It's a lab test that attempts to quantify the "total antioxidant capacity" (TAC) of a food by placing a sample of the food in a test tube, along with certain molecules that generate free radical activity and certain other molecules that are vulnerable to oxidation .

Good nutrition is very important before during and after an infection. Infection take a toll on the body especially when these cause fever, the body needs extra energy and nutrients. Therefore maintaining a healthy diet is very important during COVID-19 pandemic. While no foods or dietary supplements can prevent COVID-19 infection, maintaining a healthy diet is an important part of supporting a strong immune system.

FOOD HELPS TO BOOST IMMUNITY

- Several Herbs like garlic, Basel leaves and Black cumin.
- mushrooms, tomato, bell pepper and green vegetables like broccoli, spinach.
- Certain seeds and nuts like sunflower seeds, Flax seed, pumpkin seeds and melon seeds are excellent sources of protein and vitamin E.
- Probiotics like Yoghurt, Yakult and fermented food are also excellent sources to rejuvenate the composition of gut bacteria, which is important for nutrient absorption by the body.
- Some natural immunity supplements include ginger, gooseberries (amla) and turmeric.

Ways to prevent the immune system from failing

Every part of your body, including your immune system, functions better when protected from environmental assaults and bolstered by healthy-living strategies such as the following:

- Do not smoke
- Eat healthy foods
- Exercise regularly
- Maintain a healthy weight
- Drink alcohol in moderation
- Sleep well
- Cook meat produce thoroughly
- Minimize stress levels.

What is ORAC?

- Oxygen Radical Absorbance Capacity
- The measurement of antioxidant levels in fruits and vegetables, supplements and even juices.
- Measuring ORAC allows us to compare the capacity of individual fruits, vegetables and other antioxidant-rich foods.
- ORAC values are found primarily in the skins of these foods.

- ORAC stands for Oxygen Radical Absorbance Capacity and is correlated to antioxidants and their overall capacity in the human body to prevent and eliminate the dangerous effects of free radicals from attacking healthy cells. Examples of free radicals include toxins, chemicals, or pollutants that appear in our bodies from the foods we eat and the environment we live in. Think of free radicals as little unstable troublemaker cells that can be dangerous and cause damage in our bodies. Maintaining good health and enhancing recovery means keeping these cells under control. Eating foods with a high ORAC value is one way to do this.

PAHs and HAA

- Polycyclic aromatic hydrocarbons (PAHs) are the largest group of carcinogenic substances. PAH is formed when coal or hydrocarbons, e.g. various oils, are heated without there at the same time being sufficient oxygen to provide complete combustion to carbon dioxide.
- Some Heterocyclic Aromatic Amines (HAAs) found in cooked and especially burned meat are known carcinogens. Research has shown that heterocyclic amine formation in meat occurs at high cooking temperatures. For example, heterocyclic amines are the carcinogenic chemicals formed from the cooking of muscle meats such as beef, pork, fowl, and fish .

FOOD TOXINS

- Food is not only the elementary source of nutrients for humans but may also contain natural chemical substances with toxic properties. Some substances which are naturally occurring include cyanogenic glycosides, solanine, industrial pollutants, biogenic amines and mycotoxins.

1) Natural toxins of plant origin A) Nitrogen containing e.g. alkaloids and glycosides. B) Nitrogen free e.g. organic acid and phenolic toxins.

2) Toxins of Animal origin A) Animal liver e.g. Bile acids and vitamin B) Marine animals e.g. saxitoxin, tetrodoxin etc.

3) Fungal toxins e.g. mycotoxins of ergotism, alfatoxins.

4) Food toxins from industrial wastes A) Chlorinated hydrocarbons e.g. polychlorinated biphenyls B) Heavy metals e.g. Lead, mercury and cadmium

5) Bacterial toxins e.g. Cholera toxin and E. coli enterotoxin

6) Toxins from pesticide residues e.g. DDT and Chlorinated cyclodiene insecticide

7) Toxins from food additives and preservatives e.g. benzoic acid

8) Toxins formed during food processing e.g. polycyclic aromatic hydrocarbons,

N- nitrosamines- sodium nitrate used as food preservation in cheese product, beer and water, cosmetic- ill effect- gall bladder cancer glioma.

Dioxin: TCDD (Toxic chemical tetracholrinated dibenzo dioxin)- which is colourless and odourless, e.g. fish, meat, dairy product (nursing infant are particularly risk because TCDD accumulates in breast milk, avoid meat fish, dairy product take fruits, vegetables and cereals.

ORAC values of some common foods per 100g food

- Peppermint, fresh 13978
- Oregano, fresh 13970
- Nuts, walnuts, English 13541
- Nuts, hazelnuts 9645
- Cranberries, raw 9584
- Beans, kidney, red, mature seeds, raw 8459
- Beans, black, mature seeds, raw 8040
- Nuts, pistachio nuts, raw 7983
- Beans, pinto, mature seeds, raw 7779
- Lentils, raw 7282
- Raspberries, raw 4882

- Cherries, sweet, raw 3365
- Gooseberries, raw 3277
- Apricots, dried to 40% moisture (purchased in Italy) 3234
- Peanuts, all types, raw 3166
- Cabbage, red, cooked, boiled, drained, without salt 3145
- Broccoli, raw 3083
- Basil, fresh 4805
- Nuts, almonds 4454
- Apples, Red Delicious, raw with skin 4275

The World's Top 10 High ORAC foods per 100g

- pices, cloves, ground 314446
- Sumac, bran, raw 312400
- Spices, cinnamon, ground 267536
- Sorghum, bran, hi-tannin 240000
- Spices, oregano, dried 200129
- Spices, turmeric, ground 159277
- Acai berry, freeze-dried 102700
- Sorghum, bran, black 100800
- Sumac, grain, raw 86800
- Cocoa, dry powder, unsweetened 80933

Oxygen Radical Absorbance Capacity

- Is a measure of the total antioxidant capacity of the product
- The higher the ORAC value, the better it is at quenching free radicals
- Fruits and vegetables with high ORAC values have health benefits
- Researchers suggest that ORAC intake range between 1000-2000 units per day to promote improved health and decrease the risk of chronic diseases
- Other researchers suggest intake between 3000-5000 units per day

WHAT IS ORAC VALUE?

O- oxygen

R- radical

A- absorbance

C- capacity

ORAC is a method of measuring antioxidant capacities in biological samples.

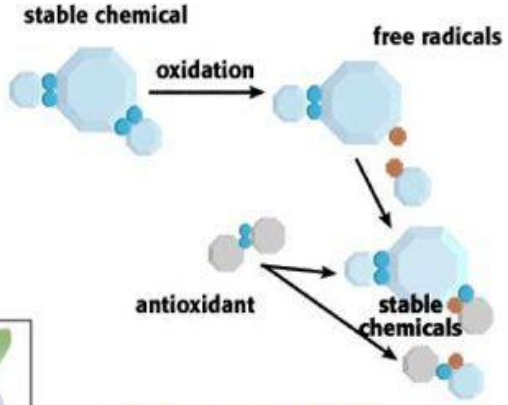
↑ ORAC + ↑ HIGH ANTIOXIDANT ACTIVITY = STRONGER IMMUNITY SYSTEM

ORAC VALUE

FRUIT

1. Goji Berries
2. Black Raspberries
3. Prunes
4. Bilberry
5. Pomegranates
6. Raisins
7. Blueberries
8. Red Raspberries
9. Blackberries
10. Strawberries
11. Noni Fruit
12. Plums
13. Oranges
14. Cherries
15. Red grapes
16. Red Grapefruit
17. White Grapefruit
18. Apples
19. Bananas
20. Pears

			
25000	7700	5770	4460
			
3307	2830	2400	2400
			
2036	1540	1506	949
			
750	670	739	495
			
460	218	210	134



What does ORAC stand for?
Oxygen Radical Absorbance Capacity

What does ORAC mean?
It is a measurement of antioxidant capacity in different foods and supplements. Higher values generally imply stronger antioxidant capabilities and thus will slow oxidative processes and free radical damage that contributes to age-related degeneration and disease

ORAC VALUE/ ANTIOXIDANT VALUE

Oxygen Radical Absorbance Capacity

FRUITS	ORAC Value*
Acai Berry	18,500
Prunes	5,770
Raisins	2,830
Blueberries	2,400
Blackberries	2,036
Cranberries	1,750
Strawberries	1,540
Pomegranates	1,245
Raspberries	1,220
Plums	949
Oranges	750
Red Grapes	739
Cherries	670
Kiwifruit	602
White Grapes	442
Cantaloupe	252
Banana	221
Apple	218
Apricots	164
Peach	158

VEGETABLES	ORAC Value*
Barley	25,500
Kale	1,770
Spinach, raw	1,260
Brussel Sprouts	980
Alfalfa Sprouts	930
Spinach, steamed	909
Broccoli Florets	890
Beets	841
Red Bell Pepper	713
Onion	450
Corn	400
Eggplant	390
Cauliflower	377
Peas, frozen	364
White Potatoes	313
Sweet Potatoes	301
Carrots	207
String Beans	201
Tomatoes	189
Zucchini	176
Yellow Squash	150

*ORAC value per 100 grams (approximately 3.5 ounces)

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How many antioxidants do you need

- Build up too much free radical exhaust, and you start to cause problems. Excess free radicals promote the development of chronic and degenerative ailments such as heart disease, cancer, arthritis, aging, autoimmune disorders and even neurocognitive decline.
- ***Antioxidants nullify free radicals. And because free radical production goes way up after we eat, having a diet full of antioxidants is the most direct and effective way to combat free radical accumulation.***

- Antioxidant content is measured using the ORAC (Oxygen Radical Absorbance Capacity) scale. ORAC values tend to be highest for spices and berries (in the tens of thousands of units) and lower for highly processed grains (in the hundreds). Non-plant-based foods (like fish, beef and chicken) are lower still.
- It is estimated that men, who consume an average of about 2500 calories a day need at least 11,000 ORAC units. Women, who eat about 1800 calories per day, should get at least 8,000 units.

Food recommended to boos immunity and High ORAC Value

Green vegetables (which contain lutein and zeaxanthin, carotenoid antioxidants that can protect aging eyes from developing cataracts and macular degeneration):

- spinach
- collards
- kale

- **Cruciferous vegetables** (contain antioxidants and other phytonutrients that reduce cancer risk):
- broccoli
- cabbage
- Brussels sprouts
- cauliflower
- turnips

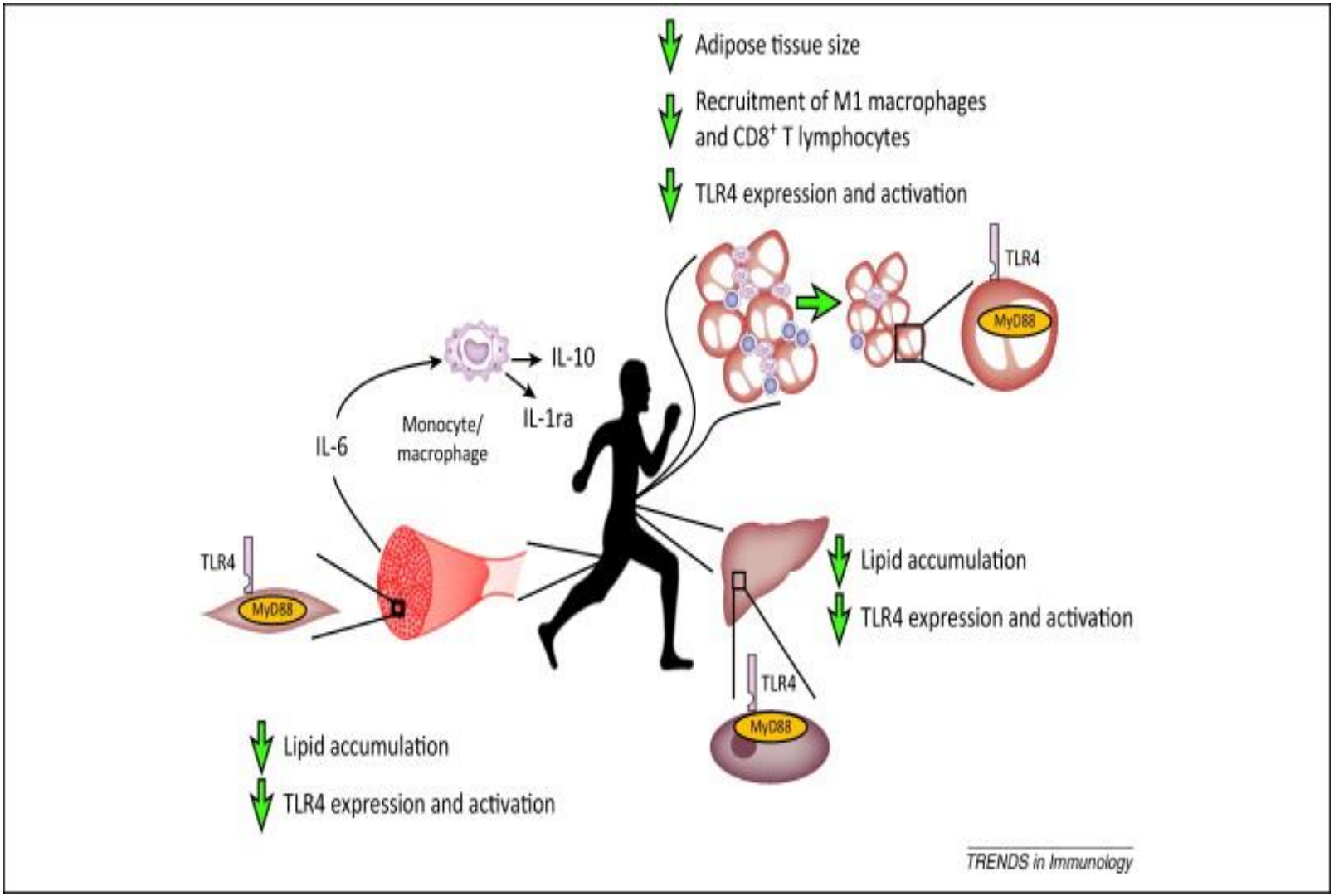
- **Orange/yellow fruits and vegetables** (rich in carotenoids that protect the immune system):
- sweet potatoes
- carrots
- mangoes
- apricots

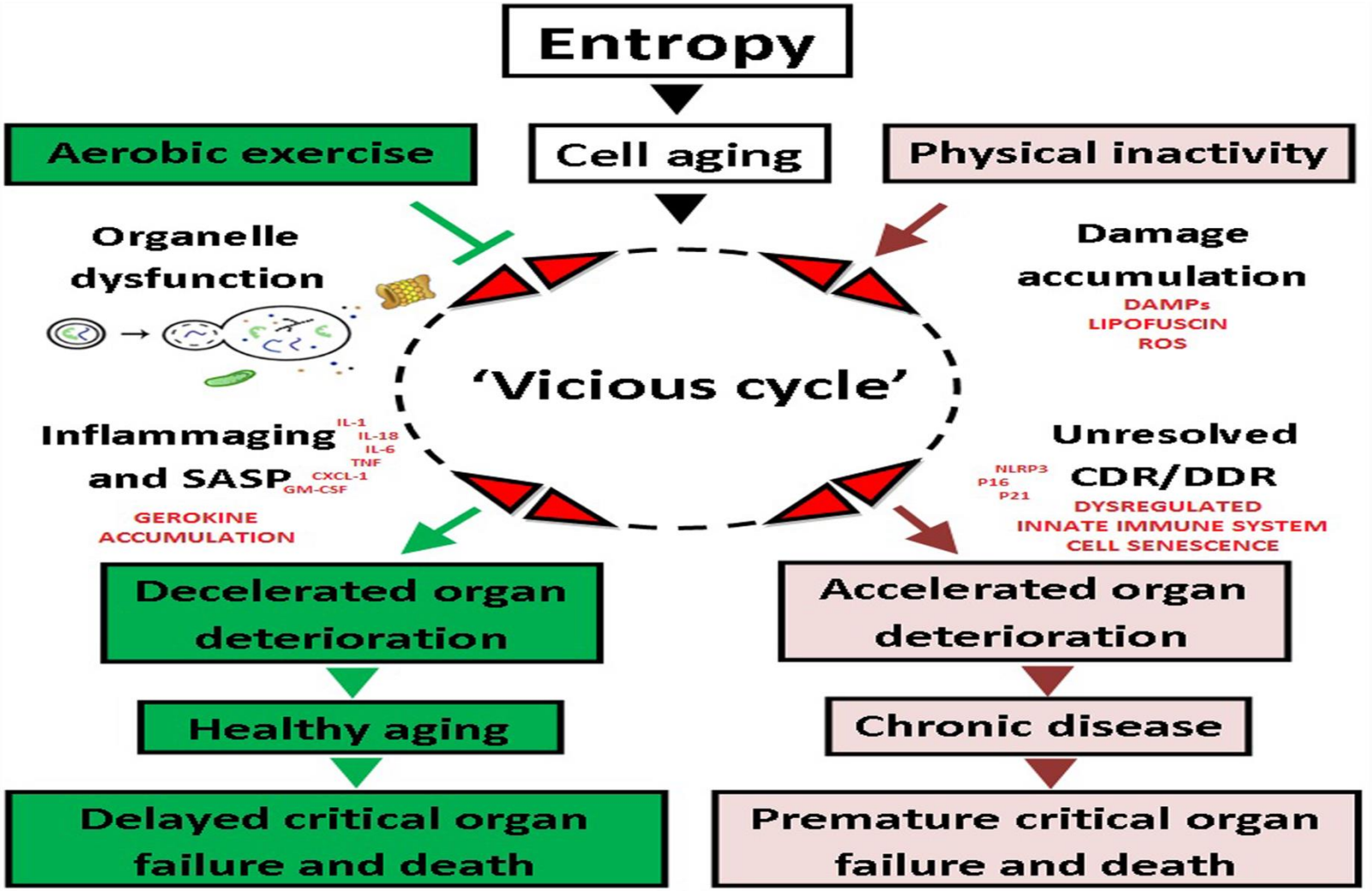
- **Red pigmented fruits** (contain lycopene, a powerful antioxidant that helps fight heart disease and some types of cancer, particularly prostate cancer):
- tomatoes
- watermelon
- papaya
- pink grapefruit

- **Blue/purple fruits and vegetables** (these hues come from anthocyanins, phytochemicals that protect against carcinogens and may help prevent heart disease):
- blueberries
- purple grapes
- red cabbage
- beets
- plums

EXERCISE PHYSIOLOGY

- **EXERCISE** : defined as intentional increased muscular activities, planned structured and basically repetitive contraction and relaxation of group of muscles.
- **EXERCISE PHYSIOLOGY**: Study of physio-chemical processes in the body that allow conversion of chemical energy into mechanical work and the changes in the organ systems in response to the effects of the work.
- Continued skeletal muscle activity utilises energy that depends on the rate of nutrients and oxygen supply to the exercising muscles.





Pre-exercise meal timing

Recommendations

Large meal:	4 - 6 hours
Lighter meal:	2 - 3 hours
Snack(liquid):	.5 - 1 hour

Timing varies with:

- Intensity of exercise
- Personal tolerance to food

Exercise & Nutrition Pre-Exercise

- No "Single" approach can apply to everyone
- You must learn from your workouts
- Best food for performance = Carbs
  - Provide body constant supply of glucose (energy)
  - Shown to prolong time to fatigue
  - Prevents tissue breakdown
  - General recommended ingestion 1-2g CHO/kgbw

Exercise & Nutrition During Exercise

- Prolonged exercise >1 hour will drain body of energy stores
  - Gatorade or other sports drinks are a good option
  - Protein improves performance & decreases damage

- DRINK WATER and lots of it!!!
  - Hydration is crucial in any workout session
    - 1/2 to 2 cups every 15 minutes

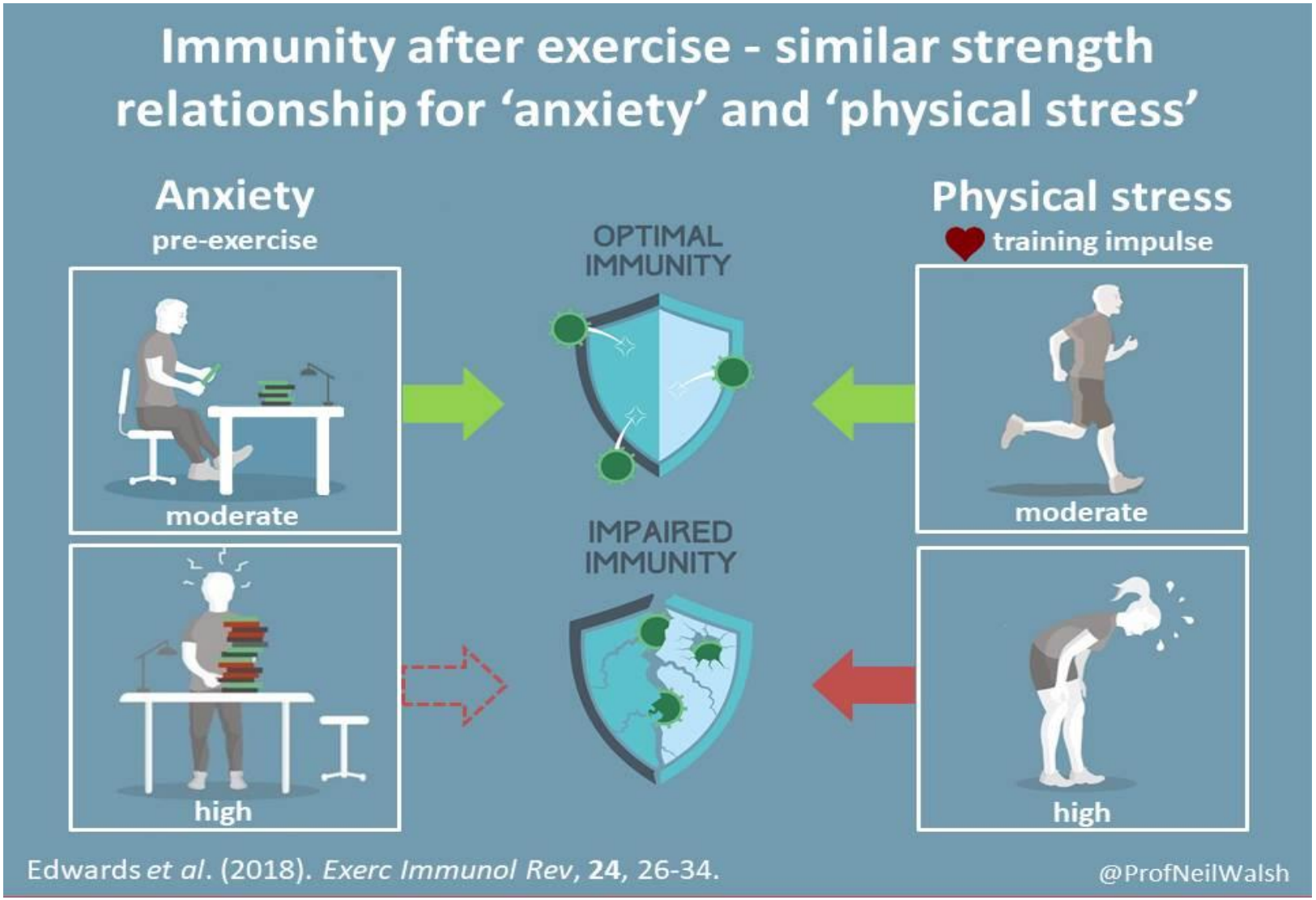
Exercise & Nutrition

Post-Exercise

- Take in food/cal. within 3 hours
- Protein is shown to improve muscle pro synth.
- Insulin sensitivity is high - CHO are readily stored as glycogen (not Fat!)
- 3:1 ratio of CHO to Protein is recommended
  - supports optimal glycogen re-synthesis
- Chocolate milk anyone?
  - Shown to be good effective in improving recovery

Exercise Nutrition Summary

- Everyone has a unique reaction to food
  - Listen to your body and make adjustments
- Carbs are your best nutrient for performance
  - Not necessarily weight loss
- Stay Hydrated!
  - Drink something w/electrolytes during prolonged exercise (greater than hour mod. intensity)
- Eat within 3hrs post workout
  - 20 minutes appears to be even better!



Remember to:

1. Always plan ahead for what you are going to eat
2. Obtain adequate amounts of protein
3. Work on Flexibility
4. Supplement your diet with a fish oil and multi-vitamin
5. green and white tea, dark chocolate and red wine, all very high in antioxidant activity

Some important guideline to follow:

- Limit consumption of highly processed food, avoid fruit juices and carbonated beverages- these are high in fat, salt and sugar and poor in nutrients.
- Consuming meat poultry and eggs is not risky but hand wash hygiene must be followed after handling raw meat, eggs or even vegetables. Throughly cooked meat/poultary may be included in moderation.
- Avoid too much fat, salt and sugar .
- Keep your body hydrated with adequate water intake for good immune response to any infection

Conclusion

When dealing with a devious disease like Covid 19, it is best to take a firm stand that prevention is better than cure. Make sure that hygiene practices are in place, eat and stay healthy, avoid crowded places and close contact interactions. Many countries around the world have already enforced movement restrictions including working from home, so take no chances, and stay safe.

THANK YOU

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