

Nutrition for Table Tennis

By Dr. Chandra MADHOSINGH

University of British Columbia and Table Tennis Canada

Email: chandram@interchange.ubc.ca

Abstract: Nutrition for Table Tennis Competitors

Health Canada has produced a Food Health Guide for eating well and our BC Provincial Table Tennis Association has used it as a motivator, including parts of it to promote better performance among our athletes. In this paper I shall attempt to entangle the four main Food Groups in order to create well balanced meals to suit the average Table Tennis competitor. During Table Tennis competitions it is also important to manage and monitor the athletes' dehydration levels, prevent hyponatremia and promote recovery.

Key Words: carbohydrates, dehydration, fats, hyponatremia, oxalates.

Nutrition for Table Tennis Competitors

Motivation

Good health, growth and maturation depend mainly in a proper diet. It can have a significant effect in the ability of Table Tennis athletes to train and perform well during competition. Maintaining proper dietary habits plays an important role in establishing a healthy life style and will drive the Table Tennis athletes to better performance and also enhancing recovery. Our athletes usually have several matches in one day and a competition may last for 2-7 days. During some multi-sport events, Table Tennis players can be active for 10 or more days.

Specific problems like combining foods based on their glycemic index, commercial products, eating disorders, special diets, weight management and vegetarianism are well beyond the scope of this paper. Parents and coaches should consult a sport nutritionist when necessary. Here you will find simple and practical recommendations about diet and hydration for training and competition.

General Recommendations

In order to supply adequate nutrients and energy for optimum performance, an athlete's diet must be well balanced. This will also provide for the repair and maintenance of tissues and for growth. Attention should be focused on the five following areas:

1. Eat a variety of foods – combine grains,

- vegetables, fruits, milk products and meat
2. Energy intake – energy requirements vary according to age, gender, body composition and type of activity related to intensity and volume.
3. Carbohydrate consumption – this is the main energy source for Table Tennis athletes. Carbohydrates stored in muscles can be depleted after an hour, depending on the intensity of the matches.
4. Fluids - the need for water increases since players perspire and ventilate. Dehydration can lead to a decrease in performance.
5. Protein – some protein is necessary to provide for adequate maintenance of muscle mass and for repairing tissue.

Canada's Food Guide

This guide (Table 1) reflects a dietary model that supplies recommended levels of essential nutrients, which help to reduce the risk of chronic disease. The key messages are:

1. Enjoy a variety of foods
2. Emphasize cereals, grain products, fruits and vegetables.
3. Choose low-fat dairy products, lean meat and food prepared with little or no fat
4. Perform regular physical activity to achieve and maintain a healthy body weight.
5. Limit the intake of salt, alcohol and caffeine.

Table 1

Recommended Number of Food Guide Servings per Day									
Age in Years	Children			Teens		Adults			
	2-3	4-8	9-13	14-18	19-50	51+			
Sex	Girls and Boys		Females	Males	Females	Males	Females	Males	
Vegetables and Fruit	4	5	6	7	8	7-8	8-10	7	7
Grain Products	3	4	6	6	7	6-7	8	6	7
Milk and Alternatives	2	2	3-4	3-4	3-4	2	2	3	3
Meat and Alternatives	1	1	1-2	2	3	2	3	2	3

Dietary Intake for Pre-Competition

On competition day, the main objective is to ensure that the Table Tennis player is well hydrated and has sufficient energy to meet the challenges of the matches for the day. Coaches and athletes should focus on:

1. The quality and volume of familiar food to be available
2. Food should be over 60% carbohydrate
3. Fat content should be 20% or less
4. Sufficient fluid is available
5. Snacks for between matches.

The Coaching Association of Canada has recommended the following for pre-event meals:

Best choices for **breakfast meal**:

Cereal – with low-fat milk

Yogurt – low-fat, plain or fruit

Fruit

French toast and/or pancakes – with no added butter or margarine

Egg dishes – not fried

Ham or steak – if lean/not fried (small amounts)

Potato – not fried

Rice – not fried

Noodles, Pasta

Toast – with limited amounts of butter/margarine

Muffins – try jam or jelly, not butter

Beverages – Athletes should drink plenty of fluid!

Bottled water

Fruit juice – fresh, canned, cartons

Skim milk, Ovaltine

Best choices for **lunch** or **dinner meals**:

Fruit and vegetables, fruit and vegetable juices – fresh, canned, cartons

Soups – broth-based

Meat, Fish, Poultry – broiled, roasted, baked, barbecued, poached (reasonable portions; trimmed fat; skin from chicken removed)

Cold cuts – turkey, chicken, lean beef, lean ham (reasonable portions)

Meat alternatives – beans, peas, and lentil dishes if these are familiar foods; gas produced when these foods are not part of the usual diet can cause discomfort.

Vegetables – steamed, boiled, baked

Potatoes – baked, boiled, mashed (without butter/margarine)

Rice – steamed, plain

Noodles – plain

Pasta – plain or tomato or vegetable sauce

Bread – rolls, crackers, all breads

Salads – bean, peeled fresh vegetables, fruit salad, low-fat cottage cheese; (small amount of dressing)

Desserts – fruit, yogurt (low fat), custards, puddings

Cheese – in moderation

Foods to Avoid

- **Fatty foods**, because they are slow to digest

- **Protein-rich food**, because they are slow to digest and are not needed as fuel during exercise

- **Alcoholic beverages** such as wine, and beer, because they can have a dehydrating effect.

- **Spicy foods** may be difficult to digest prior to exertion. (When traveling in other countries, athletes can bring a few favourite spices if they are already used to them.)

Prior to exercise, **fibre-rich foods** like whole-grain bread, cookies, and whole-wheat cereals, dried fruits (prunes, etc.) stimulate digestion and induce elimination. These foods should be avoided, especially if the athlete has diarrhea.

- **Gas-producing foods** like cabbage, broccoli, onions, and carbonated drinks, make some athletes feel bloated.

Coffee, tea, cola, and chocolate may cause diarrhea, which can have a dehydrating effect.

Foods to avoid

(Breakfast)

- Whole milk, cream
- Fried eggs
- Side bacon, sausage
- French fries, hash browns
- Fried rice
- Cream or butter sauces
- Doughnuts, Danish, pastries
- Croissants

- Butter, margarine

(Snacks, lunch, or dinner)

- Cookies, crackers, chips, granola bars,
- Cream soups
- Fried fish, meat, or poultry
- Buttered, sautéed, creamed vegetables, or soufflés
- Fried potatoes
- Butter or cream sauces
- Pâté, sausages, processed meats, liverwurst
- Potato and macaroni salad, creamy coleslaw
- Pies, ice cream, pastries

Digesting Period

The meal size and food choices will vary depending on the time between eating and performing. Athletes must allow sufficient time for digestion. High kcal meals, especially those high in fat content, take longer to digest than lighter snacks. The guidelines below should be used when planning meal times relative to a training session, a competition,

Table 2

	Serving	Calories	Carbohydrates (g)	Fibre (g)	Sugar (g)	Protein (g)	Fat (g)
Spinach & lettuce salad, sunflower seed, balsamic dressing	1 cup	137	5	1.5	1	2	12.5
Grilled chicken breast with skin in hunter sauce	8 oz	380	4	0	1	45	23
Steamed vegetables	4 oz	55	8	2.5	2.6	2	2.5
Roasted potatoes	4oz	110	25	2	2	2	0
Mango passion mousse	157g	300	32	2	24	4	18

This vitamin packed meal delivers a great balance of carbohydrates, protein and fibre. You can shave 20 grams of fat and 180 Calories off this meal by removing the skin from the chicken. Since the spinach contains oxalates, we are not able to absorb the iron from spinach. Spinach is still a good source of folic acid, vitamin A, vitamin K and vitamin C. The mango mousse has 30% of your daily requirement of Vitamins A and C.

Prevent Dehydration and Hyponatremia

Fluid replacement is probably the most important nutritional concern for an athlete. Table Tennis matches are sometimes held under hot and humid conditions and

or a series of competitions held on the same day. Coaches should be aware of individual tolerance levels for food. Experiment with these guidelines in practice, in order to establish an appropriate protocol for each athlete.

- (1) Allow 3-4 hours for a large meal (approximately 500-800 kcal or more) to digest.
- (2) Allow 2-3 hours for a smaller meal (approximately 300-500 kcal) to digest.
- (3) Allow 1-2 hours for a small snack or blender/liquid meal to digest, or whatever the athlete’s own tolerance indicates.

If the athlete will be competing within the next 2 hours, small quantities of carbohydrates are the best choice: fruit, beverages, low-fat crackers, bread, yogurt, and/or well-cooked pasta. The athlete should also drink plenty of water. (When the athlete is traveling, bottled water should be used.)

Table 2 refers to a lunch menu suggested by the Sport Innovation (SPIN) Summit.

much fluid can be lost through the skin, sweat glands and lungs from breathing. If this fluid is not replaced at regular intervals during training or competition, it can lead to dehydration. A dehydrated athlete has a decreased volume of blood circulating throughout the body. Three main effects are noticeable in that the amount of blood pumped with each heartbeat decreases; exercising muscles do not receive sufficient oxygen and resulting fatigue causes performance to suffer.

Approximately 60% of body weight is water. Research has demonstrated that dehydration, even 2% of body weight, can adversely affect athletic performance. Therefore, drinking water is a necessity. However, drinking water only does not replace the electrolytes lost in perspiration and the performance

boosting carbohydrates. Water is definitely good, but should be taken in moderation. A large amount of fluid is unnecessary and in some athletes can result in bloated stomach, puffy fingers and ankles, headaches and confusion. These are warning signs of a condition called hyponatremia.

Hyponatremia occurs when blood sodium concentration falls to an abnormally low level, precipitating a rapid and dangerous swelling of the brain that can cause seizures, coma and death. Fatal hyponatremia in athletes is rare, but it has claimed the lives of marathon runners and military recruits. Hyponatremia is often associated with prolonged exercise, but it can also occur at rest when too much fluid is ingested too quickly. Athletes should reduce risks by ensuring that fluid intake does not exceed sweat loss and ingesting sodium containing beverages and

Table 3

Body weight	Approx. amount of fluid absorbed per hour (ml)	
	From	To
30	300	450
40	300	600
50	500	750
60	600	900
70	700	1050
80	800	1200
90	900	1350

Strategies to Promote Recovery

In Table Tennis competitions where there are several matches on the same day, athletes and coaches choose wisely the type and quantity of food and snacks to be consumed. Generally, it is recommended to consume snacks high in carbohydrates between matches, and to ensure that there are sufficient sport drinks available. A substantial meal should be eaten after the last match of the day.

Delaying carbohydrate intake after training or matches will reduce glycogen stores and interfere with the ability of the muscles to recover. Several research studies show that consuming carbohydrates immediately after training or competition is beneficial for recovery. Carbohydrates drive muscles to absorb more glycogen in order to reload the athlete faster. This in turn minimizes fatigue associated with high volume training or gruelling tournament matches during a Table Tennis competition. Preferably within 30 minutes after the last match the athlete should consume some carbohydrate and repeat this for every two hours until the next meal. This allows muscle energy stores to be replenished at a faster rate than waiting until mealtime. Some athletes prefer to consume carbohydrates in a liquid form rather than solid, since exercise can dull the appetite.

The following chart (Table 4.0) is example of fluid replacement drinks.

foods to maintain an electrolytic balance for physiological homeostasis and performance.

The consumption of fluid replacement containing sodium helps to retain water in the body and increases the absorption of fluid from the intestines into the muscles. Recent research has suggested that a 6-8% of a glucose or sucrose sport drink with about 110 mg of sodium per an 8oz serving empties from the stomach as fast as plain water. An ideal fluid replacement is one that tastes good for the athlete, does not cause gastro-intestinal discomfort or distress, promotes rapid fluid absorption and maintenance of body fluid, and provides energy to the working muscles during intense training and competition.

The amount of fluid athletes can tolerate **varies from person to person**, but usually ranges between 10-15ml per kg of body weight per hour.

Table 4.0

Beverage	CHO concentration	Electrolytes
Gatorade	6%	Proper concentration
Powerade	7%	Low sodium, High potassium
AllSport	8%	Low sodium, High potassium
Met-Rx Ors	8%	High sodium, Low potassium
PowerBar Perform	7%	High sodium, Low potassium
Revenge	4%	Low sodium, High potassium
Soda pop	10-12%	Low sodium, High potassium
Endurox	15%	High sodium, Low potassium
Orange juice	11%	Low sodium, High potassium
Rehydralyte	2.5%	Very high sodium and potassium

Table 4.1 suggests a reasonable amount of carbohydrates to be consumed relative to body weight:

Table 4.1

Body weight (kg)	Quantity of carbohydrate to consume up to 30 min. after activity and every 2 hours until the next mealtime (gm)
30	45
40	60
50	75
60	90
70	105
80	120
90	135
100?	150?

Other strategies to consider are:

- The last meal of the day after training or competing should be high in carbohydrates, adequate in protein and low in fat.
- Consume moderate amounts of salt
- Select vegetables and fruits, especially those which are rich in potassium.
- Pack non-perishable foods to take to the playing hall. Jennifer Gibson, the Sport Nutritionist for the B.C. Table Tennis team, has this message for our athletes. She works as a sport dietician for SportMedBC.

Nutrition for Table Tennis

Nutrient Timing

- Plan to eat every 3-4 hours. Do not skip meals!
- Develop a nutrition timeline for training and competition

Nutrient Balance

- ◆ Breakfast: $\frac{3}{4}$ food groups + fluids
 - Cereal with milk + fruit
 - Egg + 2sl. Toast + orange juice
- ◆ Snack: 1-2 food groups + fluids
 - Yogurt + fruit
 - Low fat granola bar
- ◆ Lunch: $\frac{3}{4}$ food groups + fluids
 - Lean meat sandwich + fruit + yogurt + water
 - Vegetable soup + fruit + cheese string + water
 - Vegetarian pizza (thick crust) + fruit + water
- ◆ Snack: 1-2 food groups
 - Yogurt + fruit
 - Low fat granola bar
- ◆ Dinner: $\frac{3}{4}$ food groups + fluids
 - Pasta + meat sauce + salad
 - Chicken stir fry with rice and veggies
 - Chicken burger + milk + baked potato

Competition Nutrition

- Know what the menu will be ahead of time
- Pack non-perishable foods and fluids for

traveling

- Increase your fluid intake. Aim for 1 cup per hour of travel and continue upon arrival.
- Take a multivitamin to help reduce illness
- Be conscious of risks for food poisoning
- If you have a nervous stomach, drink liquid meals at competition and above all
- Eat familiar foods

References:

1. **Canada's Food Guide.**
www.healthcanada.gc.ca
2. **Introduction to Competition, The Coaching Association of Canada.**
www.coach.ca
3. **Gatorade Sports Science Institute, Volume 16 No.1.**
www.gssiweb.org
4. **Optimal Dietary Intake, U.S. Anti-Doping Agency.**
www.usantidoping.org