

Nicole Chai, Choreographer, Dancer, *SCAPEdance Residency Resident 2020 – 2021
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Nutrition For Dancers

Ying Xing Tan, August 2021

Dancers train as vigorously as any professional athletes, often involving arduous hours and pushing their body to its maximum limit. Dancing involves both the aerobic (lower intensity and longer duration i.e., jogging, swimming) and anaerobic (High intensity, short intermittent duration i.e., High Intensity Interval Training HIIT) system. The aerobic system produces adenosine triphosphate (ATP) from the breakdown of fuels e.g. glycogen and fatty acids. The rate of ATP production is slower but it can last longer periods of time. Dance movements requiring a sudden burst of energy, such as leaps or fast paced dance moves requires the anaerobic system which uses glycogen to produce energy. As this is done in the absence of oxygen, the anaerobic system produces energy more quickly compared to the aerobic system and is the main energy system for short, explosive efforts. The by product is the build-up of lactate in the bloodstream which often results in muscle fatigue¹⁸. Thus, it is important dancers eat adequately to help prevent injuries and promote muscle recovery and repair. Since few nutritional guidelines exist specifically for dancers, this article aims to provide general guidelines for dancers on how to meet their nutritional needs by adapting existing guidelines for athletes.

Below are some ways to fuel your body with the necessary nutrition to support the demands of dance practice and training.

Regular meals

Skipping meals will not only lead to excessive hunger but under-nutrition, depriving your body a chance to nourish your body with essential nutrients such as calcium and protein. Apart from impairing performance, this often results in low energy intake which may lead to loss of muscle mass, irregular menstrual cycles, loss of bone density, fatigue, and higher risk of injury¹.

One should aim for 3 regular meals per day to keep your energy levels high throughout the day and meet your essential nutritional needs, accompanied with 1-2 snacks in between meals to replenish your energy stores before and after practice.

Adequate Carbohydrates



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The Singapore Health Promotion Board recommends the healthy plate concept where $\frac{1}{4}$ of the plate should be wholegrains, the other $\frac{1}{4}$ lean protein and the remaining half are your fruits and vegetables. This ratio however will vary and should be adjusted depending on your intensity, level of physical activity, and demand of your upcoming activity.

Due to many misconceptions about carbohydrates, some may consider avoiding carbohydrates in fear of weight gain. However, carbohydrates are the main immediate source of energy. Most carbohydrates consumed gets broken down to glucose after digestion which is the main fuel for your brain and red blood cells. Glucose gets stored as glycogen in your muscles which gets used up quickly. Approximately 25-35% of total muscle glycogen stored get used up within a 30-second sprint. Thus, it is important to replenish them consistently to restore energy levels and for muscle recovery¹³. If you have been avoiding carbohydrates, low levels of glycogen in your muscles may explain the feeling of fatigue during classes and rehearsals. It may also be the reason to poor concentration, depression, and mood swings⁹.

There are two forms of carbohydrates - simple and complex. Simple carbohydrates do not contain fibre and therefore can be digested quickly. They are essential when you need an instant burst of energy. Complex carbohydrates are found in wholegrains, nuts, seeds, beans, and legumes which contains fibre. Fibre slows digestions, which allows a slower and more steady release of glucose into our bloodstream. Hence, they help provide a longer lasting energy level and feeling of fullness. A carbohydrate intake of at least 3-5g/kg body weight per day is recommended for light intensity exercises. Athletes who participate in moderate

intensity of exercise of at least an hour long may aim for 6-10g/kg body weight per day¹³. That will look like 300-500g of carbohydrates per day for a dancer weighing 50kg. For example, 1 slice of bread contains approximately 15g carbohydrates, 1 medium bowl of rice provides about 60g carbohydrates and 250ml of isotonic drink about 14g carbohydrates. The main goal of nutrition during practice is to provide adequate hydration and maintain blood glucose for performance.

Pre-workout

Having 1-4g of carbohydrate per kilogram of body weight eaten 1-4 hours before an event or practice may help increase carbohydrate availability. This may be achieved by having a meal approximately 3-4 hours before your event or a snack before you event. For dancers who have not consumed adequate food and fluid before extended endurance practices longer than 60 minutes, it might be useful to provide 30-60g of carbohydrates per hour during practice for maintenance of blood glucose levels¹³. Bear in mind to keep snacks low in fat and fibre to prevent gastrointestinal discomfort.



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Post Workout

Consuming about 20g of protein with carbohydrate within the first 30 minutes after practice or as soon as possible has been shown to maximise muscle recovery, reduce soreness, stimulate lean muscle growth¹⁷. Protein sources should be coupled with carbohydrate intake to replace your glycogen stores. This also helps to stabilise our blood glucose levels to help maintain it throughout the day preventing you from getting hungry quickly. The International Society of Sports Nutrition recommends a carbohydrate to protein ratio of 3-4:1¹¹. This is especially important when there is less than 8-12 hours between trainings. If you are only training once a day or a couple times a week, recovery may be achieved from your regular meal or snack.

Proteins

Protein sources include low fat dairy, lean meat, fish, poultry, and eggs. It is recommended by Phillips & Van Loon (2011) for elite adult athletes to consume 1.3-1.8g of protein per kilogram of body weight spread throughout the day. While the American Dietetic Association, Dietitians of Canada and American College of Sports Medicine recommends endurance and strength training athletes to aim for 1.2-1.7g per kilogram of body weight per day¹⁴. Dancers should opt for lean protein sources for long term health reasons. Below are some examples of snacks/meals to consider incorporating in your diet:

Snacks with 50g carbohydrates:

2 medium bananas
10 pieces of dried apricot
2 slices of bread with 2 tsp of jam
800ml isotonic drink
2 chee cheong fan with sauce
1.5 red bean bun
60g pretzel sticks/ mini pretzels
50g rice crackers

Snacks/ Meal ideas with 60g carbohydrates with 20g protein:

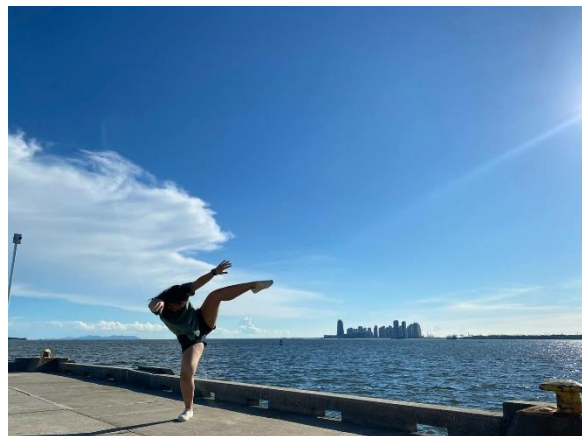
2 slices of toast with 1 scrambled or half boiled eggs or 1 tablespoon no sugar added peanut butter+ 1 glass low fat chocolate milk
OR 1 glass of low-fat plain milk with 1 medium banana
OR 1 bowl of oatmeal prepared with 50g oats + 1 glass of low-fat plain milk+ 14g raisins + 25g baked nuts
OR 1 glass of low-fat chocolate milk with 1 red bean bun + 25g baked nuts
OR 1 medium bowl of rice with 90g cooked lean protein sides such as stir fry meats/ fish with a serve of vegetables
OR 1 bowl of sliced fish noodle soup
OR 1 bowl of lean char siew or chicken noodle soup

Controlled Fat Intake

Fats are a great source of energy and essential fatty acids which are essential for fat soluble vitamins (Vitamin A, D, E, K). Consuming a diet less than 20% fat does not improve performance^{13,14}. The recommended fat intake in Singapore is 25-30% of total calorie intake, of which less than 10% should be from saturated fat.

Calcium and Vitamin D

Muscle fatigue accompanied with continuous use may lead to stress fracture (tiny cracks in the bones) when it is no longer able to absorb further shock. Common stress fractures in dancers often occur in the distal tibia and fibula, metatarsals and phalanges of the foot². Diet has a significant role in bone health across the lifespan as about 90% of peak bone growth and development usually occurs by 20 years of age. The maximum amount of bone that may be attained is usually by the age of 30 years^{6,12}.



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The calcium Recommended Daily Allowance (RDA) for Singaporean adults is 800-1000mg per day⁵. Thus, it is important for athletes and dancers to focus on maximising their bone health and nutritional status rather than sacrificing it for performance especially during intense training periods¹⁵. Having low bone mass increasing one's risk of osteoporotic fracture. Vitamin D plays an important role in the regulation of calcium and phosphorus as Vitamin D deficiency can lead to soft brittle bones in children and osteomalacia in adults. The cause of vitamin D deficiency is often multifactorial, but the common cause of vitamin D deficiency in athletes appears to be a reduction in ultraviolet B radiation absorption through the skin, especially in athletes who train and compete indoors or wear significant amount of sun protective attire or sunscreen¹⁵. Vitamin D may be obtained through diet as well as exposure to sunlight, with common dietary sources of vitamin D including fatty fishes, eggs, mushrooms as well as fortified beverages. In most cases, individuals can maintain adequate vitamin D levels through incidental day to day outdoor exposure⁸.

Hydration

Fluids should be consumed throughout the day, before, during and after workout. Thirst is a reliable sign of dehydration^{13,14}. Losing 2-3% of body mass through dehydration may impair performance, thus it is important to maintain adequate hydration before during after practice and rehearsals. You might be experiencing excessive dehydration if you lose more than 2% of body weight during exercise. Thus, athletes should aim to hydrate themselves gradually with about 500ml of fluids ~2 hours before their practice³.



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Hydrating several hours before practice may help urine output return to normal before the event or performance begins. One should aim to consume about 150-200ml of fluids every 5-20mins during practice and about 1.5L of fluid for each kilogram of body weight lost after practice¹⁶. Consuming fluids with small amounts sodium, such as isotonic beverages or consuming small amounts of salted snacks, might help to stimulate thirst and encourage fluid retention.

Summary

The goal is to eat for performance and the trick to managing your diet well is to plan ahead. While this may take up some time, proper planning may help reduce your stress level and anxiety when it comes to eating the next day. If you know you are having a busy day ahead, plan to spread out your carbohydrate and protein intake across 5-6 smaller meals throughout the day instead of 3 big meals. You should also opt for fresh produce, whole food whenever possible. This is because processed foods are often laden with sodium and refined sugar, with protein sources of lower biological value. Remember not to deprive yourself of your favourite food as all food can fit into a healthy lifestyle.

End



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