Sports And Performance Nutrition

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Week-07

Lecture-33: Female athletes

Female athlete has a very conspicuous place. Mental needs of female athletes are very different from a male athlete. Every menstrual phase has a different nutrient requirement and so is the training that can change as per the cycle. With changing hormones there is obviously a craving for certain food and if there is consumption of lower calorie intake there can be challenges as relative energy deficiency in sport. With some hormonal imbalances as seen in polycystic ovary syndrome female athletes have to tweak their nutrition further. Let us understand the nitty-gritty of these nutrient manipulations.

The guidelines dished out for athletes are common for males and females. Especially now there are some specific guidelines and a lot of research emphasis is being paid towards exclusively studying female athletes. A male athlete who is governed by testosterone to a female athlete whose anabolic hormone is oestrogen obviously has different physiological functions. At an average age of 11 or 12 years a girl starts her first menstrual cycle.

With the onset of menstruation there is a secretion of the hormone oestrogen. Oestrogen helps to increase muscle mass however oestrogen also increases adipose tissue in females. Oestrogen also increases bone mineral density and it is a heart protective hormone. Female athletes burn more fats than males and hence also they need to consume marginally lesser carbohydrate than males and this we touched upon in carbohydrate loading lecture. An average menstrual cycle can vary between 21 to 28 days.

These 28 days of the menstrual cycle period, follicular, ovulatory and the luteal phase. The nutrient need for each of this phase is different. So are the training needs that vary as per this phase. Many changing hormones break a plethora of challenges for a female athlete. During the onset of the menstruation itself when the blood supply is cut off to the uterine layer there can be pain and cramps which females experience.

The lower oestrogen can also make a female quite sullen and irritable and moody. Not only enduring the pain of the ischemia or the cramps due to the menstrual cycle along with it comes the discomfort of increased prostaglandins, loose stool and bloating. In the first phase of the menstrual cycle which is called the follicular phase after the onset of the menstrual cycle the female hormone starts increasing. This is a phase where female athletes can use more carbohydrate as a macronutrient and if you remember high carbohydrate intake is best for higher intensity workout. Also around the time of an average 3 to 5 days when the menstrual cycle stops female athletes can gradually increase the intensity of workout.

So in addition to balanced meals high carbohydrate intake can support high intensity and endurance workout in female athletes. Around the 11th to 13th day is when the ovulation occurs when there is a release of an egg from ovaries. This is the time where also the hormone oestrogen peaks. As I already mentioned oestrogen is a hormone which is anabolic in nature. So higher oestrogen supports training with powerful movement.

So it is ideal time to start planning strength training. If a female athlete is focusing on strength training there is a need to complement strength training with high protein intake. Post the ovulation the part of the menstrual phase is called luteal phase. In this luteal phase the hormone progesterone starts speaking. This is a phase where female athletes can consume more fats in their diet as the body shifts the gear to more fat burning.

So in this phase female athletes can adapt to endurance and strength training workouts. Though there is scope for plenty of research to be done on female athletes there is some suggestions indicating around these guidelines. So there are some current suggestions for the way food and training can be tweaked to suit these phases. Also in luteal phase as females can utilize more fats the recommendations are to consume slow digesting or low glycemic index carbohydrates which are whole grains, sweet potatoes and other forms of complex carbohydrates. As the females are approaching the next menstrual period the hormone oestrogen is lowered.

There is also lowered serotonin and we have talked about how serotonin impacts your mood. So during the premenstrual period and I am sure some of you have heard of PMS or premenstrual syndrome where girls can be irritable and moody. That is because they are juggling these changing hormones and also if you recollect a good intake of carbohydrate increases serotonin from white rice, bananas, oats, high carbohydrate meals. High carbohydrate meals can help increase serotonin and this is also the time where female athletes can have food cravings and an urge to eat more carbohydrates and this may explain why females just around the time that they expect the menstrual period can consume more food. Also with other changing there are also certain other hormones that influence thirst receptors and there is lowered thirst sensation.

So during the premenstrual time female athletes need to ensure they consume adequate water and plan for hydration especially if they are training. This is also the time where female athletes can consider lighter training sessions. Around the time females expect the next menstrual cycle there can be water retention and they experience bloating due to changes in the hormones and like I explained sometimes on the onset of the menstrual cycle there can also be several bouts of loose stool. In that situation females can plan their food to moderate fiber content. High fiber foods are difficult to digest and fiber itself can lead to further bloating.

So cooking vegetables or consuming foods like rice or even bread can ease the digestion process and lower symptoms of bloating. Iron deficiency anemia is very common in India especially in girls. Since there is a loss of iron due to the menstrual loss of blood females especially athletes must take care to consume good quality iron rich foods and we have discussed that in detail in the lecture on minerals. Taking care to take some heme iron from non-vegetarian foods to consuming vegetarian cholay dark green leafy vegetables with vitamin C rich accompaniment such as either tomato or an orange juice can improve iron absorption from the gut. Also if this was a new concept for you I hope you are able to observe your body's response to the various phases of menstrual cycle and please bear in mind you can tweak your food and plan for different training schedule to suit your menstrual phase.

So if you have exaggerated symptoms in the premenstrual syndrome time consuming foods rich in magnesium, omega 3, vitamin B6 can improve your symptoms. We have discussed the food sources of these nutrients in individual detailed lectures and I hope you can put these concepts together to make the most of this education. If an athlete is feeling tired and moody it can lead to low motivation and that can change your attitude towards training. I already just suggested a few minutes earlier that this is a phase where female athletes can look at recovery sessions on lighter training load ensuring a good hydration protocol especially due to lowered thirst sensation which is influenced by hormones females can prevent dehydration. Not only is there an urge to consume more food sometimes in our consultations we do hear female athletes having a very strong urge or a craving to consume sugary foods chocolates, ice cream, dessert, methi and of course this can be due to the hormone fluctuation.

So by consuming slow digesting carbohydrates or higher protein even high magnesium by adequate intake of almonds or even nutritional supplements when needed can help control these sugar cravings and the urge to consume junk food. This is also a phase where you want to restrict high intake of caffeine and definitely alcohol. Another area of concern among female athletes is the consumption of less food. In the chapter of energy availability we discussed how low energy availability can negatively impact performance. Athletic curtailing of calorie intake can increase the risk of injuries in female athletes.

With relative energy deficiency in sport there is but lowered athletic performance and with low energy availability there is a loss of menstrual cycle and that is called amenorrhea where the female athlete may miss her cycles for three months and if there is no estrogen to support the bone health the calcium is pulled out from the bones to maintain that 1% there is circulating in the blood for some very important functions of muscle contraction blood clotting. This calcium withdrawal from the bones can weaken the bones. With lowered bone mineral density there can be an increased risk of bone fracture. Relative energy deficiency in sport coupled with amenorrhea and lowered bone mineral density is called female athlete triad. Females who participate in weight category sports or who are in the phase of weight making have to ensure a minimum intake of calories.

Additionally young girls who participate in aesthetic sports are also under immense pressure to maintain their body weight. Sometimes this unfortunately can fall in the spectrum of eating disorders and these kind of problems requires an integrated approach from the sports dietician and also the sports psychologist. So as support staff who assist female athletes or individuals who are overtly conscious about their body image we need to watch out for these red flags and ensure that at all given times they prioritize healthy eating practices. In addition to adequate calorie intake carbohydrates and proteins female athletes must take care of their iron level in blood. Human deficiency anemia can cause severe fatigue and when the athlete is exhausted all the time there is but lowered athletic performance.

Adequate calcium intake in girls especially in the growing years is very important for bone formation which occurs maximum in puberty. Without adequate vitamin D calcium will not be absorbed and hence it is superfluous to mention you ought to maintain optimal vitamin D levels especially if you exercise and or if you pursue sports professionally. Sometimes in female athletes we see a condition called PCOS or polycystic ovary syndrome. This is a hormone imbalance where there is hyperinsulinemia or higher amount of insulin secretion.

The female hormone oestrogen is lowered and the male hormone called testosterone which is sometimes found in larger amount in the females.

So in PCOS the androgens or the hormone imbalance can lead to inflammation and also a loss of menstrual cycle. In this condition acne or excessive hair growth called hirsutism is not uncommon. In PCOS other than the nutritional intervention this may require medical support also. Typically in PCOS there is always a challenge of weight management where the female athletes have higher body mass index or they weigh more than usual. Since there is no treatment for PCOS the only way to manage PCOS is by addressing food.

Consuming low glycemic index food which means complex carbohydrate, vinegar that can delay digestion and prevent insulin spikes is the only way to manage PCOS along with exercise. Since PCOS is also an inflammatory condition consuming high amounts of omega 3 can keep the symptoms lowered. So this condition requires female athletes to avoid highly processed foods, sugars and refined grains as white rice. To summarize adequate calorie intake in female athletes prevents relative energy deficiency in sport. Consumption of adequate calories with training periodization can ensure regular menstrual cycle and well-being of female athletes.

Continuous diets with adequate amount of iron and calcium with vitamin D can help female athletes. To suit the menstrual phase female athletes can optimize their performance. Linguistic ovary syndrome requires special focus on slow digesting carbohydrates with high proteins and good fats as omega 3 to manage the condition. I hope you enjoyed diving deep into the different phases of the menstrual cycle and learning the way you can adapt nutrition and training. This knowledge hopefully can help each of you plan your nourishment better.

Thank you for listening.

Hello everyone this is Vedika Anand. I am a former D1 tennis player and also now a certified strength and conditioning specialist. My full time job is with the Professional Tennis Players Association. I travel for work on the tennis tour. Today I am going to talk about my experience with PCOS and how my nutrition has helped me manage it.

I have had PCOS for as long as I can remember pretty much. A lot of PCOS management comes from just lifestyle management. I took the very firm decision of not taking any type of medication or birth control to manage it because I refused to do that. Something that really helped me was understanding how to eat so that I can manage my PCOS symptoms.

I train almost 4 to 5 times a week. I train pretty heavy. But that being said, nutrition has played a crucial role in both fueling my training and also managing my PCOS. One thing that I do over the last few months that has been super impactful is carb cycling. What that basically means is I eat the majority of my carbohydrates on days that my training is more intense and also around the time that my training time is during that day. So for example, if I have a heavy leg day on a Monday followed by a light mobility session on a Tuesday, on Monday I fuel a lot better from a carbohydrates perspective.

I also train in the morning which means my majority of carbohydrates is in and around that morning time because that's when I'm most active. A few other things from a nutrition perspective that I've incorporated is non-starchy vegetables, whole grains and low glycemic

index foods. I try to stay away from as much processed food that I can, sugar, obviously alcohol. It's been a work in progress.

It's been a lot of trial and error. I just want to say that nutrition is extremely, extremely unique to each person. It's not one size fits all. So it's taken me a long time to figure out what works best for my body specifically. And obviously on top of that, there are also more things that I need to do to make sure that I'm managing my lifestyle in a way that helps my PCOS. A few other things that I could mention is my protein intake.

I prioritize protein in every meal. I try to eat as soon as I wake up within 30 minutes. I eat at least a fruit and nuts or something before my workout. I do take protein shake. For me whey protein has been great. Some people prefer plant and I know there's a lot of debate about it but I stick to whey because it suited me.

I also supplement on vitamins and minerals that are lacking in my body. So I did a blood, blood, I got my blood tested and made sure I saw what deficiency I'm having and then fueled accordingly. And hydration is the other one. I drink almost four litres of water every day. And the last thing I will mention from a PCOS standpoint that has been super helpful for me is stress management.

So I hope that was helpful and thanks for listening. I'm Prarthana Murugawe and I'm a racer. As racers we often wear specialized sports gear that are designed to enhance our performance and safety. Our gear typically includes helmets, gloves and fireproof suits. These fireproof suits provide us crucial protection during our races of course but they can also make conditions really challenging for us on hotter days because of their insulating properties.

A race day can be long on a typically hot day and right hydration with plenty of water is crucial and about two to three litres of water with electrolytes keeps me well hydrated. I usually consume light food which is mainly rice because it's easy to digest. However, in spite of this I still suffer from headaches. Correct recovery strategies can help lower and trip and fatigue. The choices that include adequate protein, fruits and vegetable intake along with omega-3 can ensure that the nutrition is taken care of over the course of the next 24 hours.