Battling Fatigue And The Heavy Legs Syndrome: Practical Advice That Works!

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Eighty two games a year is a lot of hockey to play especially if you log twenty plus minutes per game. We must be ready to physically compete in 11 games in first 21 days of March and be ready for the grind of playoff rounds in April and beyond.

Having said all this, the need to be recovered from now until the end of the playoffs is paramount in order for us to go all the way. Taking measures now to prevent future physical fatigue pitfalls is imperative.

Fatigue Defined:
The biggest in-season complaint I have heard over my 8 years in the league has been the “heavy legs” players encounter at certain times during the year. More specifically, the feeling as though you have no jump in your legs, especially at the beginning of the game. This type of fatigue has been identified in the scientific literature as “low frequency fatigue”. Without getting into too much detail, low frequency fatigue occurs because of the muscles’ inability to release calcium. The proper release of calcium is essential for effective muscle fiber contraction and thus performance on the ice.

Mechanisms of Fatigue:
There are a number of things that can contribute to “heavy legs”. First of all, your muscles are contracting every day when you step on the ice to play or practice. Added to this is the fact that your equipment does not promote heat dissipation. As your muscles contract, heat is built up in them. Constant heat built up in the legs can contribute to muscle damage and as a result, feelings of fatigue (Febbraio, 2000 – research study).

Secondly, as you sit on the bench between shifts your oxygen or O2 system is strongly activated to aid in the removal of waste products. What can occur with the activation of the O2 system is the build up of “free radicals” within contracting muscle. Free radicals have been shown to impair muscle function due to the damage they cause to cells (Armstrong et al., 1991). The end result is further contribution to low frequency fatigue or heavy legs.

A third damaging physiological condition occurs with the build up of calcium in muscles’ cells. With repeated muscular use, as evident in practicing and playing day in day out, excessive amounts of calcium can build up in the cells (don’t confuse this calcium with the type that is required in your diet). The build up calcium can have damaging effects on muscle cells and impair normal muscular contraction. If your muscles don’t contract properly, they won’t produce the force and power you need each game on a consistent basis.

How to Combat Fatigue:
The first step in combating the heavy legs syndrome is to identify when it may occur before it hits. The one identifiable marker is vertical jump. If your vertical jump is reduced significantly (1 inch or higher) over a couple week stretch then you may be susceptible to reduced jump on the ice.

The other thing you must do is to sit in the cold tub for at least 5-10 minutes after every game and hard practice. The cold bath will do a number of things to help prevent on-ice power outages due to fatigue. First of all, the cold bath will limit the amount of swelling and stiffness in the muscles (Eston & Peters, 1999). Secondly, your increased muscle temperature as a result of playing/practicing will also be reduced at a faster rate when taking a cold bath. Remember repeated increases in muscle temperature beyond a certain point can cause damage to the muscle cells. And finally, free radical damage may also be reduced with a cold bath. Since metabolism is elevated for some time after a game or practice, the degree to which dependent on how hard and how many minutes you play, the cold bath reduces your metabolism and thus opportunity for free radicals to build up.

Some may also suggest the use of antioxidants such as high doses of vitamin C and E however the research regarding the effectiveness of this is not positively conclusive.

Practically Speaking:
Not everyone needs to jump into the cold tub following each game. If you are playing less than 10 minutes, then the cold tubs will have less of an effect because you are not fatiguing the muscles as much. If you play 20+ minutes/game you need to jump in the cold tub on a regular basis.

If we happen to be lifting after a game, make sure you lift before you take a cold tub. If you are cooling down on the bike after the game, take your cold tub after the bike. The cold tub should be the last thing you do. Also, don’t confuse the cold

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tub with massage…they are 2 entirely different methods of recovery. Whatever you do, if you are playing a lot of minutes don’t jump into the hot tub after games! We are trying to reduce heat in your muscles not create more!

No Jump in the 1ST Period:
Some players over the years have commented to me that it takes until the second or third period to finally get their legs going. That is, they experience very little jump in the first period. This could be due to a couple of things. First of all, you may not be activating your legs enough prior to the game. That is, your warm up may not be sufficient enough to get your legs firing prior to the start of the game and as a result, you don’t get your legs until the 2nd or 3rd periods. The way to combat this is to up the intensity in your off-ice warm up. I did an evaluation of 3 warm up protocols with Kimmo Timonen when with the Predators prior to the start of the 2000 season in an effort to determine what protocol is most effective in getting jump out of the legs. We tested vertical jump before and after the warm up protocols on 3 separate days. What we found was that performing explosive heavy squatting (3 sets of 2 reps with 265lbs), was the best protocol in improving vertical jump from pre to post testing.

Scientific literature also supports the use of heavy, low-rep lifting as a means to activate muscles. It is known as “potentiation” and is geared towards getting the nervous system firing. Remember that this is just an option to be used and may not fit with your own preferences. Through our investigation, we also found that performing a number of bike sprints improved vertical jump pre to post. The mechanisms for this are different than those for the heavy squats, however, the sprints did warm the muscles up effectively.

The other reason why you may be experiencing power outages in the first period could be due to the caloric amount and content of your pre-game meals. When the amount of calories ingested at a 12:00 - 1:00 p.m. pre-game meal is too high and filled with refined pasta, for example, you may experience a large insulin rush thus leading to feelings of fatigue and tiredness. Your blood sugar may not normalize until the 2nd period; hence, better on-ice jump.

If this scenario seems to be indicative of what you are doing before the game and feeling during the first period, then you must do a couple of things. First, reduce the amount of calories ingested during the pre-game meal to no more than 800. Secondly, have a second meal between 4:00 – 5:00 p.m. This will aid in leveling out your blood sugar and avoiding the huge insulin spikes indicative of a single, large feeding.

If you are drinking your shake after the game and eating another high-carb meal an hour or so later, then this should suffice for replenishing your glycogen/energy stores. As a result, there is no need to eat so much at pre-game meal.

Summary: If you have experienced power outages in the past, evaluate what you are doing before the game to warm yourself up and what you are eating at pre-game meal. In addition, if you are playing 20+ minutes game in game out, start taking 10 minute cold tubs after each game and hard practices. If you don’t like cold tubs, you’ve to suck it up and do something you don’t enjoy doing…it will benefit you!

Recovery is going to be extremely important in March and especially as we hit our playoff stride. Be prepared, for what you do off the ice will definitely have an impact on what happens on the ice!

References: