TOP 10 TIPS

FIT TO LOG

This material is based upon the results of 15 years of studies with people who work hard in the woods.

Selkirk College

fitSAFE SOLUTIONS INC

BC **Forest Safety**

Sponsored in part by the British Columbia Forest Industry

KEEPING YOUR HEAD IN THE GAME

You work in the woods for a reason; the money is decent and for the most part you get to make your own decisions. But the work that you do is also some of the most dangerous there is. So how do you make sure you keep your head in the game every day, all day, do what you have to do, *and* go home safe at night?

This program is based on 15 years of research with people who work hard in the bush just like you. **If you follow the advice in this booklet, you will:**

- Learn how to adjust your diet to provide you with the energy you need during the day to work hard and bring in your production.
- Give your brain and nervous system the fuel needed to keep your reaction time and vigilance at their best all day long.
- Build and maintain your fitness and strength to improve your performance at work and help you avoid joint and muscle strains, and reduce pain if you have already suffered this kind of injury.
- Substantially reduce your risk of injury or incident.

And you'll do it all by developing a lifestyle that enables you to make these desired changes and still meets the needs and constraints of *your* reality.

MIXING THE RIGHT FUEL

Would you put the wrong fuel in your saw or truck? Not if you expect them to run well, so why consider eating foods that don't burn clean or at the right rate?

By making good choices about what to eat and drink you can not only improve your health, you can also enhance the way your muscles and nervous system perform.

MIXING THE RIGHT FUEL

Workers who followed the eating program were able to react up to 2/3 of a second faster when faced with an unexpected complex visual challenge. Think about a time when someone you know had an accident - would even half a second have made a difference in their ability to avoid getting hurt?

Sharpen your reactions by up to 18% by following the recommendations in this book.

GETTING HOME SAFE

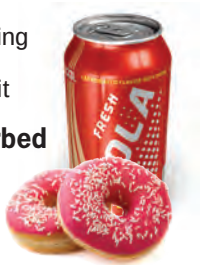
After you read the information in the Top 10, check out the *Fit to Log* manual, too. It explains more about:

- The Top 10: Why they are important and how they work.
- How to prepare food to make it better fuel for the work you do in the bush.
- Delicious tested recipes designed to give you the right fuel at the right time.
- Training programs to improve endurance and power.
- Strategies to enhance your joint stability and decrease existing joint pain.

Learn how to support your back and knees to avoid injury.

1 CARBOHYDRATE = ENERGY

Carbohydrate is the a nutrient for fueling activity in the woods. **Carbs are the preferred fuel for the brain and nerves, and for any muscle movements that are fast or powerful.** Fallers and others that have strenuous physical work to do need to get as much as 70% of their calories from carbohydrates.



All sugars are simple carbs, including brown sugar, honey, jam, syrup and fruit juices. **They're digested and absorbed very quickly (within 5-10 min)** and cause a large rise in the hormone insulin. Insulin in turn causes the sugars to move from your blood into cells where they can be used. **If you're not exercising the sugars are mostly converted to fat and stored instead of being burned,** and once they are turned into fat they can't easily be used by your nerves and brain.

When blood sugar fluctuates it makes it hard to concentrate and react quickly to unexpected events like a log rolling or a branch breaking off. **Fallers, drivers and pilots who ate snacks high in complex carbs and low fat protein every 2-3 hours while working were able to make the correct choice faster when faced with a complex visual stimulus. Overall, their performance was improved by 18% over when they ate more sugar and fat.** How much would you reduce your risk of injury if your concentration and reactions were that much better?

Complex carbs are starches, made up of long chains of sugar units. You'll find them in all grains (rice, oats, corn, quinoa, barley, millet etc); flour products like breads, crackers, and pastas; as well as in fruits and vegetable foods. Since you have to digest complex carbs to break them down to release the glucose units, the sugars are released in small amounts over an

hour or so. This makes them perfect for supplying your nerves and brain with a slow steady supply of fuel.

***If* you're going to start walking into your quarter right after you eat, foods that contain simple sugars can give you a jumpstart.**

But sometimes you have a long wait in between eating and starting an activity, like during the drive to the bush or if you have an hour's delay while you wait for the helicopter. In this case, choose complex carbs with more fiber so that you don't trigger a large release of insulin, and cause a big drop in blood sugar and a significant reduction in your vigilance level! Most active people know the feeling

caused by low blood sugar; irritability, fatigue, shakiness, loss of attention, anxiety, and maybe some nausea.

Carbohydrates are also a critical fuel for your immune system. If your diet is too low in carbs your ability to fight infections will be impaired, and losing a day of pay 'cause you're sick sucks!

Have a look at the *Fit to Log* manual for a list of foods that are high in sugars and others that will keep you fueled up and in top form all day. You'll find a wide variety of suggestions for breakfast, lunches/snacks and dinners that will tantalize your taste buds and work in any situation from home cooked meals to gas station menus to barge camps.

2 PROTEIN FOR PUNCH

Protein is in constant demand for the repair and rebuilding of all body tissues, including muscle.

Your protein requirement may be slightly higher than usual when you're working in the bush, especially on steep ground. When your muscles contract as you resist gravity pulling you downhill, (called eccentric contractions) small tears are more likely to occur in working muscle.

A little more protein can help keep your muscle from breaking down too much and give it the building blocks to make necessary repairs.

Protein, which is made up of units called amino acids, is more complicated than carbohydrates and takes longer to digest (about 2 hours).

Game meats are a great source of protein because they are very lean.

When protein is part of a meal or snack, it slows down the digestion of carbohydrate, providing a slow, steady release of fuel. So eating a little protein every 2-3 hours with each snack is a good strategy, it can help keep you from running out of energy.

Protein from meat, fish, poultry, eggs, and dairy products – often referred to as *complete* protein has all the amino acids your body needs to create new tissue. (Some of these foods also contain substantial amounts of fat, which is a good reason not to overdo some high-protein foods like cheese, beef and nuts).

Protein from tofu, dried beans and lentils is also highly useful. These vegetable sources are sometimes said to have *incomplete* protein because they lack one or more of the essential amino acids. But eaten in combination with each other, vegetable proteins have what it takes

(combine beans with whole grains over the course of your day to get "complete" protein). Vegetable protein also has the advantage of being lower in fat and full of great vitamins, minerals, and disease fighting fiber. Plus, it's generally way less expensive than animal protein foods.

For a nice steady supply of energy all day long, try to include a small amount of low-fat protein, such as lean meat, skinless chicken, fish, low-fat milk products, tofu, or cooked dried beans in every meal and snack. Check out the *Fit to Log* manual for menus, recipes and great snack suggestions that have just the right combination of complex carbs and proteins to keep you fueled up all day long.

3 CAP THE FAT

Fat is twice as concentrated in calories as carbohydrate and protein and it can be stored in unlimited amounts (darn!). But don't trash fats completely, they do provide the very important essential fatty acids and vitamins A, D, E, and K.

Fats have the most staying power because they're high in calories and digested very slowly (3-4 hours). But because the release of energy is so slow, fat will only fuel slow work. **If you have to work powerfully, too much fat can make you feel sluggish.** And it's never a good fuel for your brain and nerves.

Save your fat allowance for places where it really makes a difference. You can often reduce the fat in a meal by half or more without it changing the taste or texture of the foods (Check out the *Fit to Log* manual for some great low fat recipes and tips on to how to take your favorite food and decrease the fat content.)

Make your fat choices count for health too, by **avoiding trans and saturated fats and using nutrient-rich unsaturated oils like olive or canola when you have to add a bit of fat for cooking. You'll find the important inflammation fighting omega-3 fats in cold-water fish, canola, walnuts, and fresh ground flax seed;** try to eat a little of these foods on a regular basis.

Cap the fat by using olive or canola oil for cooking!

If you feel like you need a bit more fat for long lasting energy during the work day, try using a little coconut oil. The MCT fatty acid chains in coconut are shorter than in other fats (medium chain triglycerides) so they are digested much faster than other fats.

For faster digestion and energy availability choose leaner cuts of meat and remove the skin from chicken. Skim milk and other low fat dairy products are also great sources of protein and calcium to keep your bones strong.

Switch out high-fat margarine or butter for nutrient rich cottage cheese mixed with a little jam as a topping for your toast. Use chutney or mustard and vegetable slices on your sandwiches instead of cheese, butter and mayo, and your sandwiches will give you the energy you need when you need it.

This attention to fat may seem a bit picky when you're working hard all day. But you need the right kind of fuel at the right time to work at your peak, avoid injuries and stay healthy – and that won't happen with a diet of high-fat foods.

Keep your reflexes sharp by fueling up with complex carbs and low fat protein.

4 FOCUS ON FLUIDS

Staying hydrated is important for health and your ability to concentrate, make good decisions and avoid injury. This holds true all year round, even when the ambient temperatures are cooler. In a study with fallers, even though the temps were around 20°C, all the fallers were consistently dehydrated enough to decrease their mental and physical performance. You should try to drink a minimum 3L of water each day, best if consumed in small amounts. In warmer temperatures, you'll have to increase this amount, especially if you are a heavy sweater.

Dehydration occurs because physical activity generates heat, while your PPE restricts your ability to release it. There can also be a fair bit of water lost by evaporation into cold dry air as you breathe, especially at higher elevations.

When you have to carry water in addition to all your gear, drinking 3L or more of water already presents a challenge, but it becomes even harder to stay hydrated if you have consumed more than a couple of servings of alcohol the night before. Alcohol is a strong diuretic which means it makes you lose about twice the volume of the beers you drank, and this effect can last up to a week following binge drinking. It also causes **significant decreases in your ability to be attentive, to concentrate and to react to unexpected situations.**

Alcohol can reduce your performance at both mental and physical tasks for up to a week following binge drinking.

Consuming the equivalent of 4 drinks will dehydrate you by about a liter; combining alcohol with energy drinks makes that even worse. The energy drink masks your perception of how affected you are by the alcohol, making it more likely that you will drink more, and sleep even less. And the **caffeine it contains will dehydrate you even**

further. So if you do find yourself in that situation, try to make sure that you drink plenty of WATER while you are consuming the alcohol. (You might just find that your hangover is not quite so severe.)

The fastest way to move liquid into your body is to drink cool water, just a small amount at a time. Adding a little sugar together with a small amount of salt and potassium (like in a sport drink) speeds the process up even further. But unless you're a heavy, salty sweater (check a dark T-shirt for white streaks once it dries), are recovering from a night of drinking, or you don't have access to enough water, you probably don't need to worry about the electrolytes.

And sorry to say, but beer is not an effective hydration drink, unless its alcohol content is less than 2%. (Most beer is at least 4%).

5 TIMING IS EVERYTHING

The timing of eating is very important for people with strenuous jobs – just as it is for athletes on game day. ***When* you eat your meals and snacks and *what* you choose to eat at particular times can make a huge difference to your ability to stay alert, keep your head in the game and move quickly through the bush.**

The key to working the energy game successfully is to look at which fuels generate power and speed (complex carbs and low fat protein), which are slow and steady (fats), which fuels are in limited supply (carbs) and which ones are stored in bulk (Guess? Your hint is 'beer belly').

Carbs are great for keeping us alert and making good decisions, speeding up our reflexes and generating powerful movements. The problem is, we don't store very much of them.

After a night of sleep, or about 90 minutes of moderate activity carb stores (called glycogen) are pretty much depleted. At that stage we eat; or get grumpy, stop paying attention, lose coordination, slow down and feel tired.

Eat breakfast to make sure you have energy to stay sharp in the woods.

Fats are big complicated molecules that we store in abundance, so while they have a lot of energy available, they also take a long time to break down, and the brain and nerves are never very happy running on fat. It is possible to increase our ability to get more power out of fat burning. That's how marathon runners get such great speed for such long races, but you have to put in *a lot* of hard training to get there.

So most people need to keep their carb supply topped up, and that's where timing becomes important. **In order to make sure that you have enough glycogen, first you need to eat breakfast**. Afterwards, **munch on small complex carb and low fat protein snacks every 2-3 hours.** Leave it longer than that and your blood sugar won't be able to supply your brain, nerves and muscles. Remember that workers who followed the **small complex carb, low fat protein snack regime every 2-3 hours were able to perform 18% better** when faced with a complex visual task than when they ate foods high in fat and sugar. **Faster reaction time combined with increased accuracy is guaranteed to help make sure you go home safely every day.**

And what you eat right after work will make a big difference to how you feel the next day (please read on).

6 MAKE MEALS WORK FOR YOU

Each meal should be based on complex carbs.

Look for whole grain products to include fiber, vitamins and minerals. The less processing the product goes through the more likely it is to contain nutrients. Fresh fruits and vegetables are also great carb sources and are almost limitless in variety. Then add in a little low-fat protein; both animal and vegetable sources have their advantages, so mix it up.

Here are a few suggestions, but check out the *Fit to Log* manual for lots more information including menus, recipes and other hints and tips on how to get the most from your meals.

BREAKFAST TO ORDER:

For a drive to the woods of 1.5 – 2.5 hrs, go for low-fat proteins: Wholegrain bread french toast with non-sugar yogurt and fruit, or an omelet made ½ whole eggs and ½ egg whites, some veggies plus whole grain toast are both great choices

If you have 1 - 1.5 hrs, choose complex carbs with protein such as low fat cottage cheese with fresh fruit,

slow cooking oats (but stay away from the sugar or syrup) or a power smoothie (see the *Fit to Log* book for great recipes).

For less than ½ hr, you'll want foods that digest quickly: Wholegrain no-sugar cereal plus low-fat milk or no-sugar-added low-fat yogurt; or toast with non-fat cream cheese and fresh fruit (this won't last very long though so be sure to **pick power snacks** from Tip #7 to make it 'til lunchtime!).

MUNCH SOME LUNCH:

Lunches should be a readily digestible, **power snacks** (see Tip #7). That means not settling for a pocketful of candy or a hunk of sausage. Choose a sandwich or power muffin (see the *Fit to Log* manual for some great recipes), plus fresh fruit. Bonus: Fruit is full of protective antioxidants and hydrating fluids!

AFTER WORK:

This is your secret weapon; don't share it with the competition. It will prevent "heavy leg and arm syndrome" when you are on day 6 of a long shift!

Immediately after you stop physical activity, your body is primed for restoration and repair. This is a **key time to take in mostly quick digesting carbs and just a bit of protein – the sooner the better. The enzymes that replenish glycogen are highly active only in the first 1 to 2 hours after exercise stops.**

So unless you will be eating supper within 1-2 hr of stopping work, be sure to pack an extra power snack (small sandwich, fruit, and baked good) for the ride home. **This is the one time that getting some insulin going is helpful** – it will promote recovery and muscle building in this short window of 1-2 hours after exercise. So you can go ahead and have something sweet but low fat as it needs to digest quickly.

DINNER:

You won't be ravenous at suppertime if you've fueled up all day – and that's a good thing. Eat what you like and let your body tell you when you've had enough (be sure to listen for that STOP signal). BUT - **if you haven't eaten since quitting work, pay special attention to carbs (rice, pasta, potatoes, bread). It's critical to replace muscle glycogen (the storage form of carbohydrate) before tomorrow.**

7 PICK POWER SNACKS

Snacking has a bad rep. That probably comes from the term “snack food” which usually refers to high fat and sugar foods that aren’t particularly good for you. But eating small amounts of nourishing foods often is a good way to keep your body functioning smoothly 24/7.

For people who work hard in the woods, snacking is indispensable. How else to keep your energy level steady so you can keep going hard? And avoid the highs and lows that make you feel tired, less alert and slow to react to the unexpected.

Pack some solid nutrition before you leave for work each morning. The more variety, the better:

 Whole grain bagel with light cream cheese.

 Low fat, high protein muffins with ingredients such as berries, banana, bran and wheat germ.

 Fresh fruit and low fat non sugar yogurt (aspartame does NOT cause cancer, but fluctuations in blood sugar can slow your reaction and make you far less vigilant).

☑ Raw veggies: Carrot, parsnip, squash, jicama, radish, zucchini, cucumber, hot or sweet peppers, broccoli and cauliflower with bean spread or non fat cream cheese dip.

☑ Whole grain buns, bagels, bread, or pita with lean meat, chicken or turkey breast, or bean spreads and lots of veggies.

☑ Whole wheat wraps with rice plus chicken, or cooked dried beans or lentils and some veggies.

☑ Cold potatoes (skin on) with lean meat, chicken, cooked lentils or dried beans or hard-cooked eggs.

☑ Cold whole wheat pasta with a little lean meat or fish and low fat sauce (see the *Fit to Log* book for some recipes).

☑ A few nuts.

☑ Power squares or cookies from the *Fit to Log* manual that are high in complex carbs, low fat protein, low in fat and taste yummy of course!

8 JOINT PROTECTION

There are small **nerve endings located inside of muscle, tendon, ligament and the joint capsule that provide information to your brain and spinal cord about your body position and how fast it is changing.** These nerve endings are **very important to protect us against injury** because when something is changing very rapidly there is a much greater chance that it may be forced beyond its strength tolerance.

The good news is that **these sensors are very sensitive and they respond very quickly,** sending their information back out to the muscle to get it ready to support the increasing load. For example if a log you are walking on rolls, the increasing pressure in the joints on one side of your body tell the muscles of the other side to contract and powerfully to pull you back into balance.

The bad news is that **these nerve endings are very easily damaged. Previous injury, pain, swelling, cold, vibration, and fatigue all slow or even distort the signals.** The end result is that the force on the joint or the muscle increases faster than the protective reflex can kick in. **An injury results because the force exceeds the strength of the joint structure when the muscle doesn't provide support in time.**

The other thing that contributes to the problem is when because of a previous injury, poor fitness or bad posture, **the reflex is re-set so that the *wrong* muscle is recruited.** In some cases, this not only reduces the muscular support, but can even increase the force being exerted on the stressed joint making it even more susceptible to injury.

Recently this whole field of muscle recruitment and stabilization has become a focal point for injury prevention and performance enhancement.

Programs designed to reset and sharpen the reflexes have been shown to be very effective at decreasing injuries in non contact sports like soccer, basket ball and volleyball. Even more recently it's being applied to occupational injuries.

Focused agility exercises and correct core activation can be incorporated into your day to reduce the risk of injury. The bonus is that when the right muscle is recruited at the right time, with increased speed, you get much better power outputs!

Check out the *Fit to Log* manual for more information and some examples of exercises that you can incorporate into your day, like when you are waiting for your ride, or take a few moments break before refueling. It doesn't take much time before you will see some great results.

9 FITNESS IS THE KEY

If you want to attain peak physical performance, you need to be fit. It doesn't matter whether you're a faller, bucker, hooktender, chokerman, bullbucker or forest engineer, it's the powerful muscles, stable joints, good endurance, fast reflexes and speed when you need it that will allow you to make good production and not get hurt.

Don't plan to wait until you start work in the bush to get into shape. There just isn't enough recovery time if you want to push the limit every day. Add-in sleep loss and a poor diet, and instead of adapting your body starts to break down leaving you much more susceptible to injury.

Without the resources to heal the small bits of damage that occur each day, they get worse and worse until all of a sudden it hurts too much to go to work and you have a repetitive strain injury.

In the research studies most **workers tested reported chronic pain and were not very good at completing a series of functional movement tests that were designed to evaluate strength, endurance and stability.**

It takes time and hard work to get in shape. When you work out harder than usual you send your body a signal that it needs to adapt. Then you need the right **building materials** to create new tissue and enzymes (amino acids, carbs, essential fatty acids, vitamins and minerals) and then finally you have to make sure that you have the **energy and time** to allow your body to make the desired changes. **But increased fitness has been proven over and over to reduce overuse injuries.**

Look at your *Fit to Log* manual and **use the exercises designed especially for fallers and others who work hard in the bush.** It's not the only way to get in shape, but this program was designed to help you face the kinds of physical stresses that you see in the woods on a daily basis. Based on the latest in sports science techniques, it's aimed at strengthening the muscles, tendons, and ligaments that you use while working, and training them to work along with your nervous system to protect your joints.

If you are already fit and strong it's still worth while to use the stability section. It will reduce your risk of injury and decrease existing pain.

10 LEARN TO BE WEIGHT-WISE

While those of you who are active in the bush every day don't have to worry too much about being overweight, people who spend most of their time at a desk job often find their weight creeping up every year.

Regular, strenuous exercise is the best technique for burning fat. But don't use a scale to assess fat loss. Chances are you'll build muscle once you start working out, and muscle is heavier than fat. Know that if your clothes are getting looser, you're losing fat.

If you are **lean already make sure you eat enough healthy food to keep your weight up. When you work in the bush every day and don't take in enough food to meet your energy needs, your immune system can't fight off infections** like colds and flus, or repair the small bits of wear and tear in your muscles and other tissues.

Even worse, your nervous system won't be getting the fuel it needs to keep your reflexes working at top speed, leaving you vulnerable to injury. A quick way to pack in some healthy calories is to add ¼ cup of dry skim milk powder to anything. It's a great inexpensive source of low fat protein and some carbs, and will help maintain your weight.

Even if you would be happy to shed a few pounds, eat to keep your blood sugar stable and supply your body with all the nutrients it needs to stay healthy. Lose weight too fast and your body will do everything in its power to gain it back – and more. Human bodies are programmed for survival: the rate at which a body burns calories will drop if you don't eat enough.

Be cautious of fast food. High fat items like pizza, french fries and commercial muffins might look attractive, but they are loaded with nutrient poor calories. The combination of fat and sugar is

guaranteed to decrease your ability to concentrate, stay vigilant and slow down your reactions to an unexpected event.

If you practice the recommendations in this program you will be following healthy eating and activity patterns (share them with your family, they can benefit too!). You may not be worried about health now, but did you know that there are **4 simple things that are guaranteed to significantly lower the risk of death from ALL causes?** Compliance with a program of:

1. Exercise
2. Diet rich in fresh fruits and vegetables, whole grains and low in fat
3. Stop smoking
4. No more than two drinks of alcohol/day

Has been shown to decrease the rate of cancer in a large group of workers by 25%, cardiovascular disease by 45%, back pain by 65%, diabetes by 70% and depression by 95%. Pretty nice odds!

RE-FOCUS ON RECOVERY

To work hard, stay healthy, and avoid injury, give your body time and materials to make repairs and rebuild. The only way to do this is to eat a healthy diet and get enough rest. For maximum performance, vigilance and the ability to work hard and stay focused for long periods of time you need to get 8 hours sleep minimum, every night.

At the end of a workday, treat your body with care. It's your most valuable piece of equipment. **If you feel sore, deal with it immediately.**

Ice the sore area right after work and a couple of times during the evening. A dedicated bag of frozen peas inside a thin pillowcase makes a great ice pack, but don't leave it on for more than 10-15 minutes at a stretch. For muscle strains, alternating ice and warmth can also be effective.

☑ ***Gently* move the sore area through the full range of motion and massage it** a couple of times during the evening and again during the next day. This helps prevent scar tissue from forming and increases the blood supply to the injured area so that nutrients can be delivered and wastes removed. If the pain persists, book a session with a massage therapist.

☑ **Anti-inflammatory drugs.** Pain and tissue damage are mediated by small molecules produced in damaged tissue. Non-steroidal anti-inflammatory drugs are very effective at inhibiting the production of these signaling molecules, blocking pain and decreasing peripheral damage (ice works on the same thing). Beware however, that these same molecules have many important functions in your body (like blood clotting and making red blood cells) and the drugs will block them all. **Omega-3-fatty acids** are natural anti-inflammatories, good food sources are cold water fish and fresh ground flax seed.

If icing and stretching don't stop the pain, think about resting the injured area. **Taking a day or two off early on in an injury can allow enough healing to take place that you can recover, whereas trying to work through the pain can escalate something minor into a more serious, long term problem. Be careful if you are using pain medications as you are blocking an important safety signal.**

For more information on recovery and all of the Top Ten Tips check out the *Fit to Log* manual.

Look after sore knees to prevent a small strain from turning into a big problem.

KEY POINTS ABOUT EATING

To work hard, stay alert and avoid injuries and accidents it's important to keep your blood sugar levels from getting too low or too high. To do this:

Eat a good breakfast that will be digested within 30 min of *starting* your activity

Eat a small snack of complex carbs and low fat protein every 2-3 hours. Some examples are:

- 1-2 pieces of fresh fruit and a cup of skim milk.

- A sandwich made with chicken breast on whole grain bread, with lettuce, sprouts and tomato.
- One cup of cut up fresh vegetables and ½ cup of non-fat unsweetened yogurt or 1 tbsp non-fat cream cheese.
- One or two Power Muffins, Bars or Cookies made using the recipes in the *Fit to Log* manual.
- One piece low sodium beef jerky and a piece of fresh fruit.

Look at the *Fit to Log* manual for many more suggestions!

☑ Eat a snack immediately after stopping physical activity for the day.

This snack should be higher in simple sugar than your regular snacks throughout the day

Carbs are essential to keep you focused and alert, so that you come home safely every day.

KEY POINTS ABOUT CARBS

Carbs that are higher in fiber take about 1 hour to digest. Whole-grain breads and cereals and whole fresh fruits and vegetables are good to eat anytime.

Higher-sugar carbs will be absorbed quickly. They're good if you are already engaged in an activity and need a boost or right after your activity stops at the end of the day.

Carbs give you energy for powerful movements, carrying a heavy load of gear, climbing through debris or slash, or moving quickly up steep ground. They also provide energy for the nervous and immune systems, keeping you alert and focused while protecting you from injury and illness.

Eat complex carbs in small amounts every 2 hours for energy to keep you alert and quick reacting.

Carbs are not stored in large amounts so breakfast is essential

to restore liver stores, and small frequent snacks are important to keep it topped up. The only way to keep your muscles from being depleted of glycogen after 4-5 days of hard work is to make sure that you take in **fast digesting carbs within an hour or two of stopping your activity for the day.**

The best way to restore your muscles during a long shift is to get a good snack right after work.

KEY POINTS ABOUT PROTEINS

Protein takes about 2 hours to digest. ***Include a little low-fat protein at every meal or snack.***

Proteins are important because they provide building blocks to repair and make new tissues, and they slow the digestion of carbs down just a little.

KEY POINTS ABOUT FATS

Fat takes about 3-4 hours to digest. Make your fat choices based on good health and the small amounts that are necessary for cooking and good flavor.

The healthiest fats come from fish, fresh ground flax, and canola and olive oils. **Avoid trans fats and limit saturated fats,** found mostly in animal sources.

MCTs found in coconut oil are digested faster than other fats. They can be used to top up your energy for slower work.

KEY POINTS ABOUT WATER

It's important to replace the water you lose through sweating and respiration every day. **To absorb fluid fast and keep it in your body, drink small amounts often**. If you have been consuming **more than 4 drinks of alcohol in the past 24 hours or drinking a lot of coffee or energy drinks you will be dehydrated** enough to impact your ability to focus, react quickly and make good decisions.

Carry a small bottle of water in your pocket so you can keep yourself hydrated for best mental and physical performance.

NOTES

DISCLAIMER

If you haven't been exercising regularly it's important to check with your physician before beginning this or any other exercise program to make sure that you are not at risk for cardiovascular disease or have any other health concerns. Neither the author nor the sponsoring organizations are responsible for any illness or injury that may result from this program, if you chose to follow it you do so entirely at your own risk. If you feel faint or experience pain while doing these exercises seek medical attention immediately.

NOTES

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2. PROTEIN FOR PUNCH
3. CAP THE FAT
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5. TIMING IS EVERYTHING
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