

Laser Fitness Tips



The goal: Hike all the race, non-stop straight-legging, the upper body parallel to water, the knee out the rail, and the hands out pasting the shoulder.

Why?: To get more **POWER!!!** Who hikes more can use less boom vang, less outhaul and can sail high and faster.

How?: Sailing, cycling a lot and doing some work out.

First of all, it would be better if you have a coach. A coach can make you train more in less time.

Here are some tips that can help you start a training program:

- How to build a hiking bench
- Laser Workout
- Expert advice about your knee
- 5 recipes of home made Power Bar and 2 home made Sports Drinks!!!

Links to fitness pages

- [Fitness for sailors](#) Paid help
- [Dr Jenkins](#) - Medical advices: Stretching, heart rate monitors, hydration, Injury clinic, Nutrition and much more!
- [The Triathlete's Web - The Source For Triathlon Info!](#)
- [The Fitness Partner Connection](#)
- [Gatorade](#)
- [Newsgroup: rec.sport.triathlon](#)
- [Newsgroup: rec.bicycles.racing](#)

Training Software

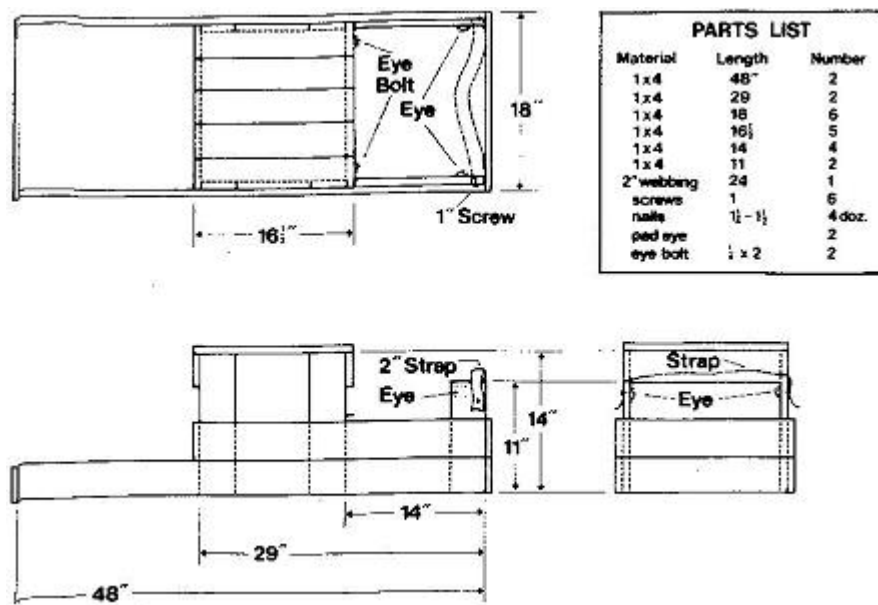
- [The Athlete's Diary](#)

The hiking bench

Hiking in the bench is a very good way to improve your hiking abilities. 30 minutes per day it's very good, if you don't go out to sailing or in days with light winds.

Hike as long and as hard you can. 10 minutes isn't easy. You can try using some heave shock cord to simulating pumping (Remember, one per wave!!!). In order to make the things a little harder, try to hike carrying one medicine ball (5 kilos).

Click [here](#) to see the plans and parts list for a Laser hiking bench.



Laser Workout

Remember, stretching and cardiovascular warm up of at least 20 minutes are recommended prior to each Laser workout. Perform this circuit three times.

- **PUSH-UPS, 25-35**
Push-ups should be done slowly (one about every three seconds), with your head up, looking straight ahead. This will help develop your shoulder and chest, and assist your steering and trimming techniques.
- **SUPERMAN**
On your stomach, extend your arms and legs in line with your spine. Raise your hands, chest, thighs, knees, and feet off the floor as high as necessary and hold for two

seconds... that's one. The Superman is a key part of the workout because it will help to strengthen the muscles in your back which balance the often over-used abdominal. This one is a must if you plan to wear a weight jacket.

- **LEG LIFTS, 2-6 MINUTES**
lie on your back with legs straight out. Raise your feet one to two feet, with your head held up off the ground and hold it. If you feel any compression in your lower back, try placing your hands (palm down) under your butt for some leverage. This particular exercise is best simulation of hiking I have come across. This is a great time to practice your mental skills...think strong thoughts. Just like when you're racing, don't forget to breathe!
- **REACH FOR THE STARS, 15-30**
Lie on your back, and with your arms extended forward, raise up until your shoulder blades clear the floor, and hold for one second. Be careful not let your stomach muscles relax when in the "down" position. This is a basic abdominal exercise which will help you to maintain the maximum distance between your shoulders and the rail of the boat.
- **DIPS, 25-35**
Suspend your body between two bars or stationary objects, and raise yourself up and down. Dips should be done as slowly as push-ups for best results. These are great for forearms, triceps, and shoulders, and are a must if you like to learn to steer and trim with your hands and arms as far from the rail as possible.
- **IRON CHAIR**
Place your back flat up against the wall, and form 90-degree angles with your thighs, and calves. When done properly, it should appear that you are sitting in an invisible chair. Remember to breathe! This works most of the hiking muscles from the waist down.

Expert Advice about your knee

By [Shona Moss Lovshin](#)

I once did a study (for a biomechanics class - I'm just completing a Masters degree in Exercise Physiology now) that calculated out the moment torques around the knees and hips and the righting moment exerted on the boat by hiking on a Europe dinghy. I inserted the calculations on a spreadsheet so that I could input various sizes of people in various hiking positions

(straight leg, bent leg, etc - i.e. I could change the hip and knee and neck angles). The results were not surprising to me. The loads on the knees were very large in, obviously, a separating direction (upwards of 200 Newton's at an angle of 33 degrees from the vertical in the direction towards one's head - imagine a side profile view of someone hiking. This is for someone of 155 lbs). Four ligaments per knee take up this force (and one of them will be slack) when the quadriceps muscle is slack (which is fairly often).

The knee moment or torque calculated was around 155 Nm for this same 155 lb person in the straight legged person. Therefore, for one knee the quadriceps had to exert a force of $155 \text{ Nm} / 2 = 77.5 \text{ Nm}$ around the centre of axis of the knee in order to maintain the straight legged position. By the way, for the bent legged position, the moment for one knee was 40 Nm. Then, this subject did a measured maximal isometric contraction for knee extension. The maximal voluntary contraction was ~220 Nm for one knee. Therefore, while straight legged hiking, the force that the quadriceps has to contract at to maintain the position is 35% of its maximal voluntary contraction force. For the bent legged position, the quadriceps has to contract at 18% of its maximal voluntary contraction to maintain that position. Keep in mind though that this is only one person who at the time was NOT doing any leg strength training.

In the isometric exercise physiology literature several papers have looked at how long one can maintain isometric contractions of muscles at various percentages of maximal voluntary contraction (MVC). In isometric contraction, blood flow to the muscle tissues is greatly impeded and even halted in many cases. For example, isometric contraction at an intensity above 60 to 70 percent of MVC will block circulation as if "artificially blocked by a tourniquet". Combining the results of several papers shows that even at isometric contractions of 10 to 15 % there still is a mismatch between contraction and blood flow. One study measured time to exhaustion for a load corresponding to 10% of MVC; near exhaustion occurred in 25 minutes. In another study, mean time to fatigue was 3.6 minutes for an isometric contraction at 30% of MVC. Another study showed that time to exhaustion was just over 4 minutes for a contraction of 20% of MVC. To hold an isometric contraction for over an hour, the endurance limit of force may be as low as 8% of MVC.

Anyways, what this told me (it was not too earth shattering!) was that this particular subject (I guess that I should say here that it was me - yup, me and my not very strong quadriceps! :)) could not hold the straight legged position for very long. This was no surprise to me! Considering that I would have to hold a 35% of MVC contraction to maintain the position, I would not be in that position for long.

Many of you know that you can bent leg hike without any quadriceps contraction at all. I've done that lots! With the help of friction of the back of your pants on the side of the boat AND with those knee ligaments taking up all the knee reaction forces (all 200 N of them) I can "hang" on the side of the boat. This is also where knee cartilage takes a bit of a beating. Especially pounding over waves..... By the way, cartilage does not grow. It is not supplied by any blood circulation. It is kept spongy only by the synovial fluid it sits in. Therefore, if you damage it, it will not repair itself as muscle will. Food for thought.

So, what did I learn from all of this?

- Do work out properly to strengthen all the muscles around the knee. I would suggest heading to a gym to do the bulk of your strength work and then use the hiking bench for specific training (i.e. specific muscles and isometric contraction). Make sure you include general strength work

(typically, 3 sets of 8 to 10 reps - this is very general - but works - talk to the staff at your gym. They can help you out with rep intensity, warm up set of reps, exact number of reps done, etc.). This way your MVC will increase. Make sure that you work on all the major muscle groups: Quads. Hamstrings, Gastrocnemius and Soleus, Gluts, Tibialis Anterior (on front of shin), back, and stomach. These are all really important for hiking.

- The forces imposed on the knee and the forces required to be exerted by the quadriceps muscles are large and should one feel pain in the knee joint, go to the doctor first and then start a strengthening program to remedy the problem.

- When hiking, try to relax your quadriceps muscles while hiking every so often. Waves make this easier because you move your body around. This will allow more blood flow in and out of the working muscles.

- Do add aerobic training to your schedule. It is debatable whether aerobic training helps in recovery from anaerobic work (which isometric contraction is) but sailboat racing has a real aerobic element to it (but certainly does not look like it relies on it or is limited by it as shown in the ONE scientific paper that I've found that gave the physiological and performance stats on the Australian Laser racing team from the early 1990s) considering races last longer than 5 minutes.

Wow, this is WAY too long! But, I thought someone might be interested in the information obtained from the little project I did. Straight legged hiking is not always feasible to do for a whole race if leg strength is not adequate enough. Although, sitting and hanging on your knee ligaments and the friction of your pants is not always so good either. Strong legs are important!

Enough of my crap!

Bye,

Shona Moss Lovshin

Homemade Power Bars and Sports Drinks

A recent thread on rec.sport.triathlon has been on how to make your own sports drink/energy bar. Then I join these recipes with some recipes extracted from rec.bicycles.racing.

Sports Drinks

Robert Haas' classic "EAT TO WIN" has a recipe for a fluid replacement drink made from water, orange juice, and salt. It's called "Quickfix":

- 1 cup water
- 2 tablespoons fresh orange juice

- 1/3 teaspoon table salt

CHILL

Drink two cups 15 minutes before exercise; 1-2 pints for each hour of strenuous activity.

From [Rolf "Ironman" Arands](#)

I use the following on long tri's (ironman):

- 100 g of Perfect 1100 (chocolate weight gainer)
 - enough water to fill a 20 oz water bottle
 - add table salt to taste

The Perfect 1100 is a weight gainer with high carbs, low fat, medium protein content, plus vitamins, etc. Mixes well with water. Goes down really well with salt added (don't know why really). Also, it is readily absorbed and causes no digestive problems (e.g., gas or diarrhea).

This coming year I will use about 3:1 or so ratio of sodium chloride to potassium chloride (three pinches table salt, 1 pinch potassium chloride.)

Energy bars

This recipe appeared in Bicycling magazine 2-3 years ago. It's a good alternative to buying energy bars- these are cheap, easy to make, don't melt in hot weather, and actually taste pretty good.

24 dried figs

1/3 cup honey

4 Tbsp orange juice

2 Tbsp lemon juice

2 1/2 cups unbleached flour

1/2 tsp baking soda

1/4 tsp baking powder

1 Tbsp canola oil

1/4 cup dark corn syrup

2 egg whites (I use egg substitute)

1 cup oat bran

Instructions: mix figs, honey, OJ and lemon juice in a food processor. Mix all other ingredients separately (except oat bran). Combine 2 mixtures, roll into golf ball sized balls (makes 20-24), coat with oat bran, and bake at 350 deg for 10-15 minutes. Store finished product in the refrigerator.

[Tom Roehr](#)'s recipe for a home made 40/30/30 bar.

3.5 Tbsp of Joe Weider's 90% Plus Protein Mix (I use Chocolate Malt Flavoured)

2 Tbsp Peanut Butter (I use a brand that has only peanuts and salt as the ingredients)

3 Tbsp Light Corn Syrup (Karo)

Mix ingredients together in a bowl. You will end up with something with the consistency of Play-Dough. If it seems wet, add a little more of the Protein mix.

Here is the caloric breakdown (Using values from USDA listing on packages)

	Protein	Carbohydrates	Fat	
Weider Protein	112	9	6	
Peanut Butter	36	12	144	
Corn Syrup	0	180	0	
Totals	148	201	150	499 Total Calories
	29.65%	40.28%	30.26%	

Nuclear Free Energy bar Recipe

[Phil Etheridge](#)

Comments and suggestions welcome.

They seem to work well for me. I eat bananas as well, in about equal quantities to the Nuclear Free Energy Bars. I usually have two drink bottles, one with water to wash down the food, and the other with a carbo drink.

You will maybe note that there are no dairy products in my recipe -- that's because I'm allergic to them. You could easily replace the soy milk powder with the cow equivalent, but then you'd definitely have to include some maltodextrin (my soy drink already has some in it). I plan to replace about half the honey with maltodextrin when I find a local source. If you prefer cocoa to carob, you can easily substitute.

C = 250 ml cup, T = 15 ml tablespoon

1 C Oat Bran
1/2 C Toasted Sunflower and/or Sesame seeds, ground (I use a food processor)
1/2 C Soy Milk Powder (the stuff I get has 37% maltodextrin, ~20% dextrose*)
1/2 C Raisins
2T Carob Powder

Mix well, then add to

1/2 C Brown Rice, Cooked and Minced (Using a food processor again)
1/2 C Peanut Butter (more or less, depending on consistency)
1/2 C Honey (I use clear, runny stuff, you may need to warm if it's thicker and/or add a little water)

Stir and knead (I knead in more Oat Bran or Rolled Oats) until thoroughly mixed. A cake mixer works well for this. The bars can be reasonably soft, as a night in the fridge helps to bind it all together. Roll or press out about 1cm thick and cut. Makes about 16, the size I like them (approx 1cm x 1.5cm x 6cm).

* Can't remember exact name, dextrose something)

Another Power bars Recipe [John McClintic](#)

Have you ever watched a hummingbird? Think about it! Hummingbirds eat constantly to survive. We lumpish earthbound creatures are in no position to imitate this. Simply, if we overeat we get fat.

There are exceptions: those who exercise very strenuously can utilize - indeed, actually need - large amounts of carbohydrates.

For example, Marathon runners "load" carbohydrates by stuffing themselves with pasta before a race. On the flip side Long-distance cyclists maintain their energy level by "power snacking".

With reward to the cyclist and their need for "power snacking" I submit the following "power bar" recipe which was originated by a fellow named Bill Paterson. Bill is from Portland Oregon.

The odd ingredient in the bar, paraffin, is widely used in chocolate manufacture to improve smoothness and flowability, raise the melting point, and retard deterioration of texture and flavour. Butter can be used instead, but a butter-chocolate mixture doesn't cover as thinly or smoothly.

POWER BARS

1 cup regular rolled oats
1/2 cup sesame seed
1 1/2 cups dried apricots, finely chopped
1 1/2 cups raisins
1 cup shredded unsweetened dry coconut
1 cup blanched almonds, chopped

1/2 cup non-fat dry milk
1/2 cup toasted wheat germ
2 teaspoons butter or margarine

1 cup light corn syrup
3/4 cup sugar
1 1/4 cups chunk-style peanut butter
1 teaspoon orange extract
2 teaspoons grated orange peel
1 package (12 oz.) or 2 cups semisweet chocolate baking chips
4 ounces paraffin or 3/4 cup (3/4 lb.) butter or margarine

Spread oats in a 10- by 15-inch baking pan. Bake in a 300 degree oven until oats are toasted, about 25 minutes. Stir frequently to prevent scorching.

Meanwhile, place sesame seed in a 10- to 12-inch frying pan over medium heat. Shake often or stir until seeds are golden, about 7 minutes.

Pour into a large bowl. Add apricots, raisins, coconut, almonds, dry milk, and wheat germ; mix well. Mix hot oats into dried fruit mixture.

Butter the hot backing pan; set aside.

In the frying pan, combine corn syrup and sugar; bring to a rolling boil over medium high heat and quickly stir in the peanut butter, orange extract, and orange peel.

At once, pour over the oatmeal mixture and mix well. Quickly spread in buttered pan and press into an even layer. Then cover and chill until firm, at least 4 hours or until next day.

Cut into bars about 1 1/4 by 2 1/2 inches.

Combine chocolate chips and paraffin in to top of a double boiler. Place over simmering water until melted; stir often. Turn heat to low.

Using tongs, dip 1 bar at a time into chocolate, hold over pan until it stops dripping (with paraffin, the coating firms very quickly), then place on wire racks set above waxed paper.

When firm and cool (bars with butter in the chocolate coating may need to be chilled), serve bars, or wrap individually in foil. Store in the refrigerator up to 4 weeks; freeze to store longer. Makes about 4 dozen bars, about 1 ounce each.

Per piece: 188 cal.; 4.4 g protein; 29 g carbo.; 9.8 g fat; 0.6 mg chol.; 40 mg sodium.

Powerbars NO more, homemade -- YES!!! [Eric Conrad](#)

I don't know about any of you out there in cyber-mtbike-land, but I was getting tired of buying Powerbars and other nutrition supplements to enhance my riding. However, I do understand the benefit of having a quick, nutritious snack that is full of energy on hand during a ride.

So I asked around and came up with a recipe for Powerbar-like bars that seem to have a lot of what we need. I'll place the recipe here on the Usenet for all to copy, distribute ... [but please don't market them, cause I'll only kick myself for not doing it first ;-)].

Please make them and enjoy them before you think about flaming me. Trust me, you'll like them much more than Powerbars, and they're cheaper to make than to buy their counterpart.

ALSO, PLEASE POST ANY OTHER RECIPES YOU HAVE FOUND THAT HELP BIKING PERFORMANCE!!!

Eric BARS OF IRON :-}

1 Cup dark raisins 1 1/2 teaspoon baking powder

1/2 Cup golden raisins 1/2 teaspoon baking soda

1/3 Cup butter or Margarine 1/2 teaspoon salt

1/2 Cup sugar 1/2 teaspoon ground ginger

1 egg 1/2 Cup liquid milk

1 1/4 Cup Whole Wheat Flour 1 Cup quick cooking oats

1/4 Cup toasted wheat germ 1 Cup sliced almonds (optional)

1/2 Cup golden molasses (dark is ok also)

1/2 Cup Non-fat dry milk

Chop raisins (in food processor if possible). Cream butter, sugar, molasses & egg.

Combine flour, dry milk, wheat germ, baking powder, baking soda, salt and ginger. Blend into creamed mixture with liquid milk. Stir in oats, raisins, and half the almonds (if desired).

Pour into greased 13x9x2 inch pan and spread evenly. Sprinkle with remaining almonds (if desired).

Bake at 350 degrees for approx. 30 minutes. Cool in pan and cut into 1x4 inch bars.