

Spring 2021

OPTIMIZATION GUIDE

Live

Better



Smarter

Race

Faster



Coaches, Athletes & Sports science Begin the switch...

"Endurance athletes have long been concerned about all the sugarcarbs being consumed - but athletes have had no option. Athletes are looking for education and quality products that support them in establishing a baseline efficiency of fat-oxidation and easy-to use lowcarb high-fat products for training and racing.

The product roadmap we're building with SFuels is very exciting."



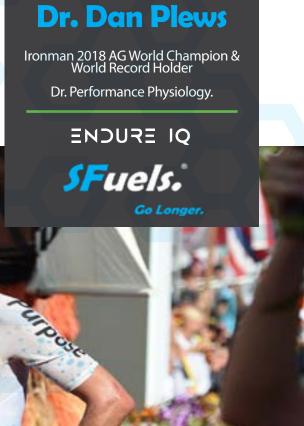
"Professional and amateur athletes continue to experience the high risks of spiking and crashing blood-sugars during ultra-endurance racing and training.

Extreme blood sugars swings continue to be a key factor in DNF (Did Not Finish) or poor-performance results, from Gut distress, stable-energy and bonking (hitting the wall).

Without optimally training the body to perform efficient fat-oxidation, athletes have no option but to begin taking in high amounts of sugar-based fuels and drinks, and are then left to experience the devastating effects.

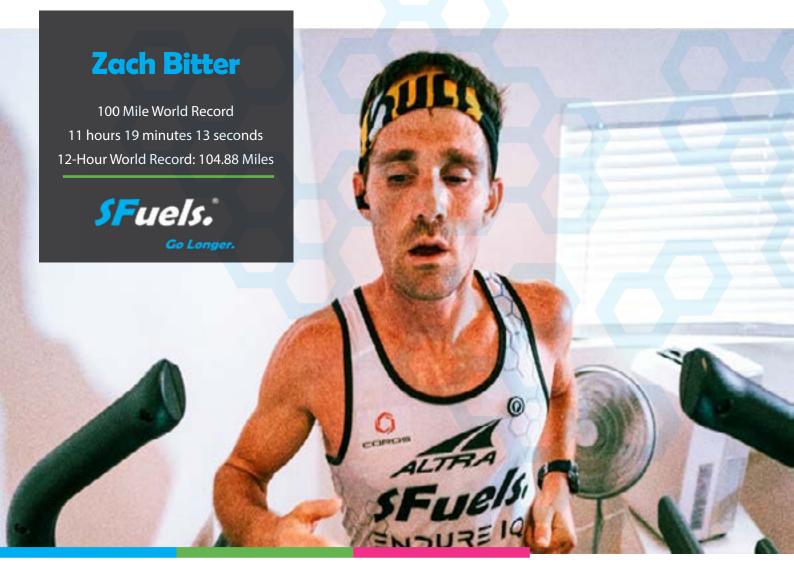
wels.

Furthermore, these risks are not limited to racing alone. For years science has shown that the acute and chronic inflammation caused by swinging blood sugars is a leading cause of our most debilitating diseases."



Professional Athletes Podiums and Records...

"For long endurance efforts, regardless of your dietary preferences, the goal on race day from a fueling standpoint is to defend your small fuel tank, muscle glycogen. Historically, we have been taught that this meant leaning heavily on carbohydrates in daily nutrition, as well as during workout sessions and races. This has left a wake of digestive issues for many professional and recreational athletes who simply have not been able to tolerate that level of intra-race fuel loading. The alternative is to assist the defense of muscle glycogen by improving your fat oxidation rates, which can be done strategically with diet and a more balanced workout fueling strategy. When I started a low carbohydrate approach to endurance over 10 years ago, very few resources were available to replace the carbohydrate rich tools designed for moderate and high carbohydrate athletes. SFuels has created a unique line of products from inter-workout to lifestyle options to help athletes who prefer to lean on fat as their primary fuel source, and defend their glycogen stores in a way that is kinder to their digestion.



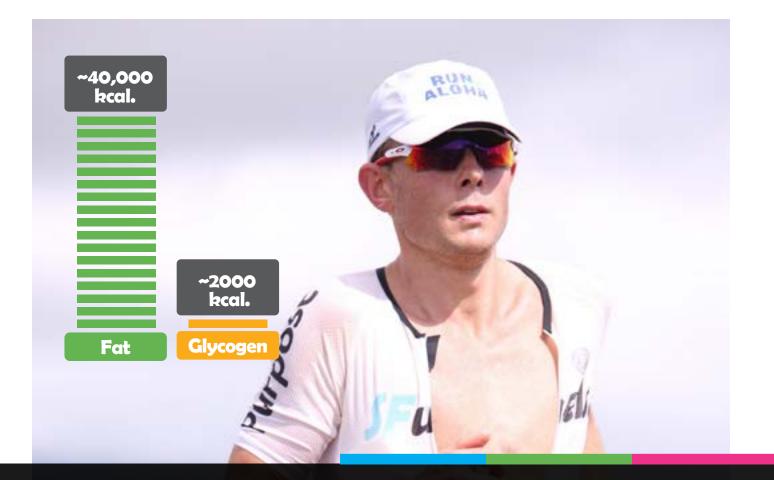
"Since 16 yeras of age, I've been racing on the Xterra World Tour and won my first professional World Tour title at age 20.

There's no doubt that this ability to perform on the world stage at a young age was due to the increased training load, faster recovery and more consistent power as a result of being a fat adapted athlete. Especially in such high intensity racing the margin between winning and losing is tiny, so there's no way I wanted to run the risk of spiking blood sugars, bonking and race ending GI distress. Plus even as a young athlete longevity is always in the forefront of my mind, which is why I'm particularly excited to build a lifelong career alongside a company like SFuels who I know for certain put the level of attention to detail into their products as I do into my race performances.



Professional Athlete
ITU Cross-Tri World Champion
Xterra World Tour Race Winner





Go Longer.

While the body holds only ~2000 calories of glycogen, 40,000 calories of fat are ready and waiting to be used for fuel. However, most endurance athletes have trained themselves to first, burn sugars for fuel, while-leaving these fat reserves totally under-utilized.

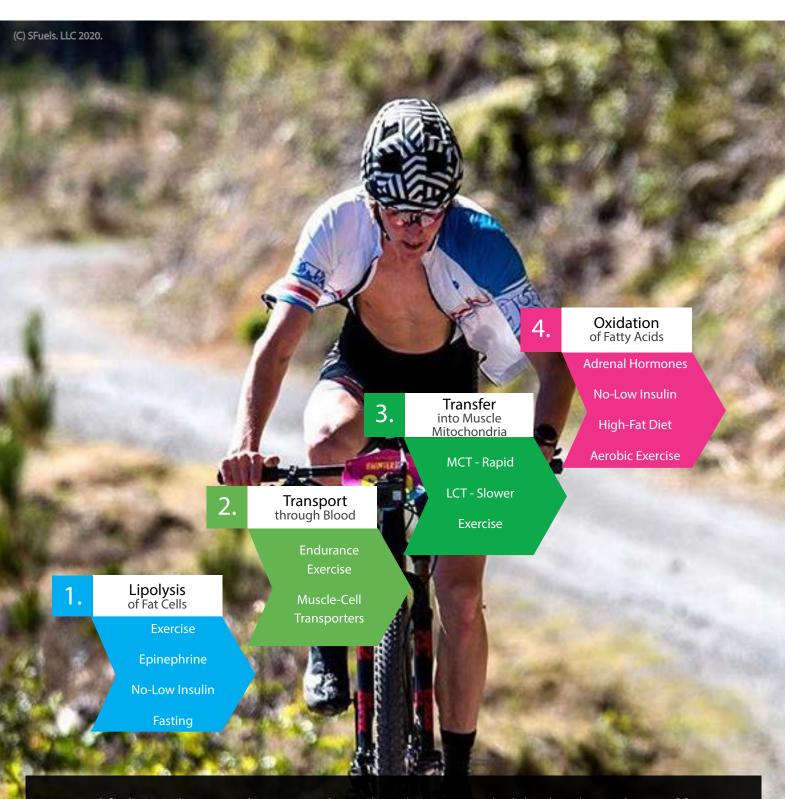
What if we could shift our fat oxidation from 0.3 Grams/Hour, to over 1.2Grams per hour? Wouldn't you want to Go Longer, with –

- CLICK HERE
- · A smoother stream of energy, and preserved glycogen levels,
- Less need to carry and consume high-amounts of carbs,
- Reduced risk of sugar-crash bonks in high-intensity training and racing,

uen

- Reduced sugar-triggered GI/gut distress in training/racing, and,
- Improved recovery and more consistent training blocks.

THE 4 STEPS AND DRIVERS OF EFFICIENT FAT OXIDATION



In a simplified view, there are 4 key over-arching physiologic steps which lead to the oxidation of fat in the muscle cell. Each of these steps have several factors which influence the ramp up, slow-down or shutdown of this metabolic chain. Clearly exercise positively effects many of these steps, as does a higher-fat diet, while conversely insulin (simplified carbohydrates) blunts several of these steps. Like all physiologic processes in the human body, this physiology can be trained for imporved efficiency.

SHIFT NOW FOR IMPROVED FAT AND CARB OXIDATION

Case Study CLICK HERE

BEFORE

making the transition most athletes carb intake can range from 400 grams to over 600 grams per day...

LIVE Better

LIVE LOWER

Maintain a lower-carb higher fat lifestyle in the 50-150Gr/Carb per day range, to build a foundation fat-adapted metabolism.

RACE+

Faster

RACE HIGHER CARB

Simultaenous access multiple energy-substrate sources including medium/long chain fats and carbohydrates for predictable high-intensity racing and training.

200

300

100

50

ACCELERATED TRANSITION

Make a temporary shift to ~50Gr/
Carbs per day for 2-4 weeks, while raising fat consumption to trigger greater fat oxidation and

TRAIN FAT-OXIDATION

Optimally train metabolic systems to efficiently burn fat during longer slow low-intensity training, through fueling with minimal carbs and higher fat.

TRAIN

Smarter

ACCELERATED TRANSITION

Accelerate the re-training of your fat-oxidation enzymes and physiology by making a <u>temporary shift</u> of the mix and type of foods for a 2-4 week period.

CARB\$
REDUCE TO

FATS INCREASE TO

PROTEIN TIMED/MEASURED

~50Gr per day

65-80% of your daily Calories

1.0 – 2.0Gr/Day per pound per athlete recommendations¹

YES

Non-Starchy Vegetables All Berries

(see Page 15)

Creams, Butter, Nuts Olive, Coconut Oil, Whole Fat Yoghurt, Avocado, SFuels Train

Fish, Eggs, Meat, Chicken, Beans, Nuts, SFuels Revival, SFuels LIFE Bars

Make it Simple - See the Next 2 Pages - SFuels LIFE and SFuels LIFE Bars.

NO

Pastas, Rice, Grains Cereals, Sodas, Juices, Baking, sugar, candy

Safflower, soybean, corn, peanut, canola oils

Dairy snacking between meals.



Easily transform meals, by choosing from 100s of these Low-Carb High-Fat recipes.

https://www.pinterest.com/sfuelsgolonger/



Have a Question? Need help or support?

Email SFuels Support Team: Support@SFuelsGoLonger.com



SFUELS LIFE

Use SFuels LIFE to SIMPLY RESHAPE your everyday snacks, shakes and meals to a lower-carb, higher fat profile. Make it easy to keep the same snacks and meals you like - but without the sugar and insulin spikes.

ELECTROLYTES (SALTS)

Maintain mental and physical drive by maintaining normal electrolyte levels, as you transition off high-carb foods & simple sugars in the diet.

QUALITY CALORIES

Maintain caloric intake with medium chain-triglycerides and higher fat snacks, foods and drinks, while training your fat-oxidation. Eliminate the need to use sucrose, fructose, glucose, maltodextrins and sugar alcohols in your foods and meals.



RECIPES HERE - making it simple: SFuels LIFE GUIDE.



SFUELS LIFE
RECIPE BOOK HERE

LIVE

Better

SFUELS LIFE BARS

Meet the demands of an endurance athletes lifestyle with great tasting real food, mixed with resistant starches to satisfy your intense appetite, while supporting your gut and msucles from the effects of long-hot endurance workouts.

body use fats for fuel by eliminating the use sucrose, fructose, glucose, maltodextrins alcohols. sugar Provide quality oils and fats to train the bodies metabolism for efficient fat-based calorie absorption, assimilation and utilization.

Provide highest quality protein isolate for excellent absorption, and minimized lactose levels to support repair of micromuscle damage and minimize the unwanted effects of higher milk-sugar loads or lactose-sensitivities.

MAX YOUR HIGH-INTENSITY THRESHOLD WORKOUTS



Hit your high-intensity workouts with force, feeling satisfied and fueled, without the sugar spike. Take SFuels LIFE BARS ~1Hr before your workout.

HIT Training When Carbs?

MAX YOUR RECOVERY, POST AEROBIC WORKOUTS

2



Support recovery of micro-fibre muscle and gut-membrane damage from long endurance workouts, by feeding quality protein isolate and resistant starches, without the sugar spike or sugar alcohols. Take SFuels LIFE BARS within 30mins after your workout.

MAX YOUR FAT OX' EFFICIENCY - INTERMITTENT FAST

3



Continue to max your fat-oxidation efficiency from overnight intermittent fasts, by breaking the fast with a very low- carb, high fat-protein-fibre snack. After a 14-15 hour overnight fast, break your fast with SFuels LIFE BARS and/or water, coffee or tea.



DIG INTO THE BEST CARBS

Low-carb does not mean 'no-carb'. Here's a spread of nutrient dense low-carb, low glycemix index foods - you can add as much as you like into your diet and lifestyle.



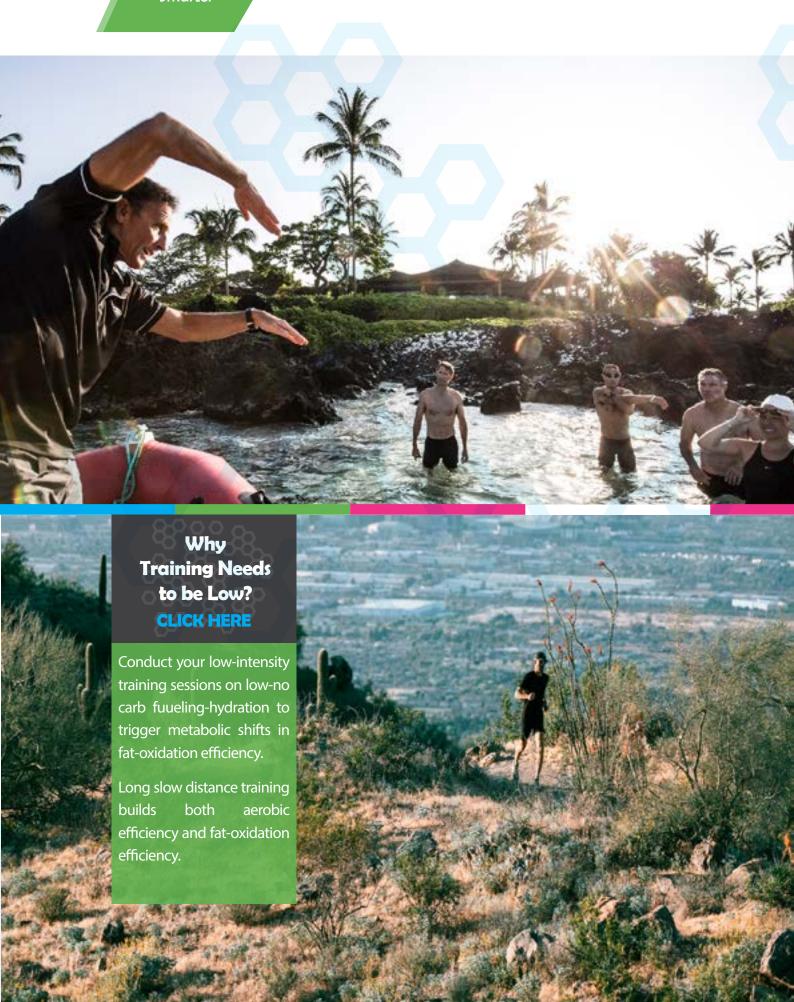
Cooking: Fiber and blood sugar impact.

Natural fruits and vegetables are not only dense in nutrients, but also in fiber. Fiber slows the digestion-absorption rate of nutrients into the blood system. Cooking dilutes this impact, by breaking down the cellulose in fiber, so seek to maintain a mix of uncooked and cooked carbs.

TRAIN

Smarter

LOW-CARB TRAINING





TRAINING FAT OXIDATION

Training Fat Oxidation

Day to day dietary (including during training) intake of quality fats, begins to shift and train the internal metabolism and muscles to become less reliant on carbohydrates. Lipolytic and oxidative enzymes that breakdown fat can be trained (like muscles) through diet and exercise, with lab case results showing upto 2X improvement, in fat oxidation efficiency.

An athlete will develop this adaptive fat oxidation response by burning more free fatty acids and/or ketone bodies for fuel at higher and higher intensities. Training fat oxidation efficiency, is highly valuable to the endurance athlete in enabling the body to preserve precious glycogen stores, while enabling stable fuelenergy to muscles through flexible and simultaneous supply of fat and carbohydrate substrates.

As consistently recommended by sports science research and coaches, endurance athletes should conduct the majority (~80% duration) of their training in Zone 2 to optimize their aerobic metabolism, while minimizing inflammatory load and triggers. High-Intensity interval training is critical to optimal performance, and will be covered in the following Racing/HIT section of this guide.

Low-Intensity Training Fuel: SFuels TRAIN

At lower intensity training, fat oxidation is the predominate fuel substrate used by exercising muscles. Athletes trained on lower-carb substrates have shown they can spare and preserve glycogen levels longer than high-carb athletes. The below chart provides simple guidance of using SFuels TRAIN for both lower, and higher carb lifestyle athletes. Also highlighted here is the recommended guidance of when to shift (relative to duration) to SFuels RACE+ (mix of fat and starch-carbs) fuel in your training sessions.

		SFuels TRAIN - Servings / Hour (in 16oz water. Add/Reduce water per serve, relative to your ambient environment)				
Athlete Type	Discipline	1Hr	2Hr	3Hr	4Hr	5Hr
	Swimming	Water	1Hr	1/Hr	61 161 6	SFuels TRAIN to:
Low-Carb (50-150gr/Day)	Cycling	1/Hr	1/Hr	1/Hr	Shift from SFuels TRAIN	
Diet-Lifestyle	Road Running	1/Hr	1/Hr	1/Hr	to:	
Athlete	Trail/Elevation Running	1/Hr	1/Hr	1/Hr	Race+ 1/Hr	
	Swimming	Water	1/Hr	Shift from SFuels TRAIN to:	Shift from SFuels TRAIN to:	Shift from SFuels TRAIN to:
Higher-Carb (>150gr/Day) Diet-Lifestyle Athlete	Cycling	1/Hr	1/Hr			
	Road Running	1/Hr	1/Hr			
	Trail/Elevation Running	1/Hr	1/Hr	Race+ 1/Hr	Race+ 1/Hr	Race+ 1/Hr



SFUELS TRAIN





RACING AND HIGH-INTENSITY TRAINING



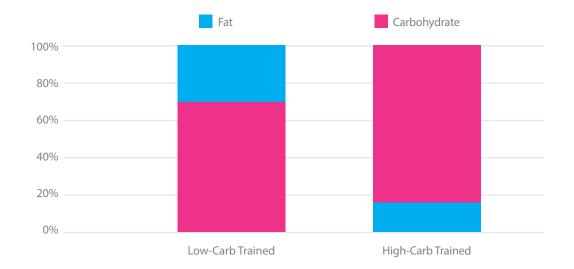
VO2Max substrate testing has shown that Low-Carb trained athletes can oxidize fats at over 90 grams per hour, which can in some cases, be as much as 3-4 times more than high-carb trained athletes.

This approach supports the low carb trained athlete to train or race at higher intensities, consume less carbs, in the interest of avoiding the infamous bonk, race stopping gut distress (PAPER HERE) and unmanageable energy swings."



Fat/Carb % Oxidation Efficiency at High Intensity

Comparison at 270W Cycling







Pre-Race and Race Start: Fat/Carb Optimization

	Rate of Perceived Exertion* and Zones	30-60 mins	>1Hr
Pre-Race	Rest - RPE 1		RULE 1
Racing	RPE 7 - 8-9 (Zones 3-5) Deeper Breathing. Muscle Awareness	RULE 2	(Eugle DACE)
Macing	to Intense Breathing & Muscle Awareness	SFuels TRAIN	SFuels RACE+

RULE 1: DO NOT consume insulin triggering grains, starch, simple sugars or large amounts of dairy on race morning. Target low-carb cereals, eggs, coffee/tea, low-carb fruits like berries, or SFuels LIFE bar, SFuels TRAIN as best pre-race meal considerations.

RULE 2: Complete the first 30-60 minutes of your race with NO intake of sugars/carbs. Use SFuels TRAIN for hydration-electrolyte support in this first 30-60minute race period if desired.

Begin using SFuels RACE+ after the first 60mins and thereafter (see next page).

Applying this to your race-day prep enables muscle cell glucose transporters, to rapidly move to the muscle cell wall, open glucose channels, and allow the free flow of glucose into the muscle cells, without insulin. Muscle cells are better positioned for improved simultaneous oxidation of both fats and glucose, thereby providing a smooth supply of energy and power. By enabling higher fat oxidation during high intensity racing, athletes will burn less glycogen (sparing effect) and also reduce the risks of known gut/Gl distress from simple sugars like sucrose (fructose+glucose) and fructose.

Train and test your fuel-water dosage requirements against expected race day intensities, temperature, elevation and duration.

*Rate of Perceived exertion is provided as a guide here to help, translate exertion signs of rising intensity levels to approximate lactate threshold levels – and where oxidation rates shift between fat and carbohydrate.

Put the 'PLUS' into your High Intensity Training

In high-intensity interval training (typically <2hours) sessions and double-session training days, SFuels recommends the use of SFuels Race+ as the preferred hydration-fueling drink, 30mins after beginning the training session. SFuels RACE+ is optimized for HIIT with MCT fats, PLUS pre-digested branch-chain starches to fuel high-intensity sessions and facilitate rapid recovery for the remainder of your day, and your second session of a double-session training day.





Dosage Guidance - During Race

As intensity levels shift during the race from changes in elevation, wind, heat/humidity, competitive-racing dynamics, and exhaustion – carbohydrate oxidation will increase, and therefore carbohydrate intakes will need to increase.

However, athletes with high fat-oxidation efficiency will burn more fat, and preserve glycogen stores better, and therfore require less carbohyrate intake than high-carb (less efficienct) athletes.

	Fat-Ox Efficiency	Fat-Oxidation Grams/min	Fat-Oxidation Calories/Hr.
	Very High	1.5	810
Highly Efficient Fat-Oxidation (Low Carb) Athletes	High	1.4	756
(Low Carb) Attrictes		1.2 - 1.3	702
Less Efficient (High-Carb) Fat Oxidation Athletes	Low(er)	0.3 - 1.0	162 <i>-</i> 540

Calories/Hour Demand - at Various Intensities

	Cycling			Running		
	12-13 mph	16-19 mph	>20 mph	5 mph (12min/mile)	7 mph (8.5min/mile)	10 mph (6min/mile)
60kg/132lbs	420	660	900	420	630	900
75kg/165lbs	525	825	1,125	525	788	1125
90kg/198lbs	630	990	1350	630	945	1350

Efficient Fat Oxidation Athletes	use SFuels TRAIN	1 Race+ Sachet/ Hour	2 Race+ Sachets/Hour	use SFuels TRAIN	1 Race+ Sachets/Hour	2 Race+ Sachets/Hour
Less-Efficient Fat Oxidation Athletes	use SFuels TRAIN	2 Race+ Sachet/ Hour	2-3 Race+ Sachets/Hour	use SFuels TRAIN	2 Race+ Sachets/Hour	2-3 Race+ Sachets/Hour

Testing fuel-dosages at various intensities in training is critical to best optimize race performance outcomes, and mitigate under/over hydration and gut-distress issues.



SFuels Race+ Storage Ideas

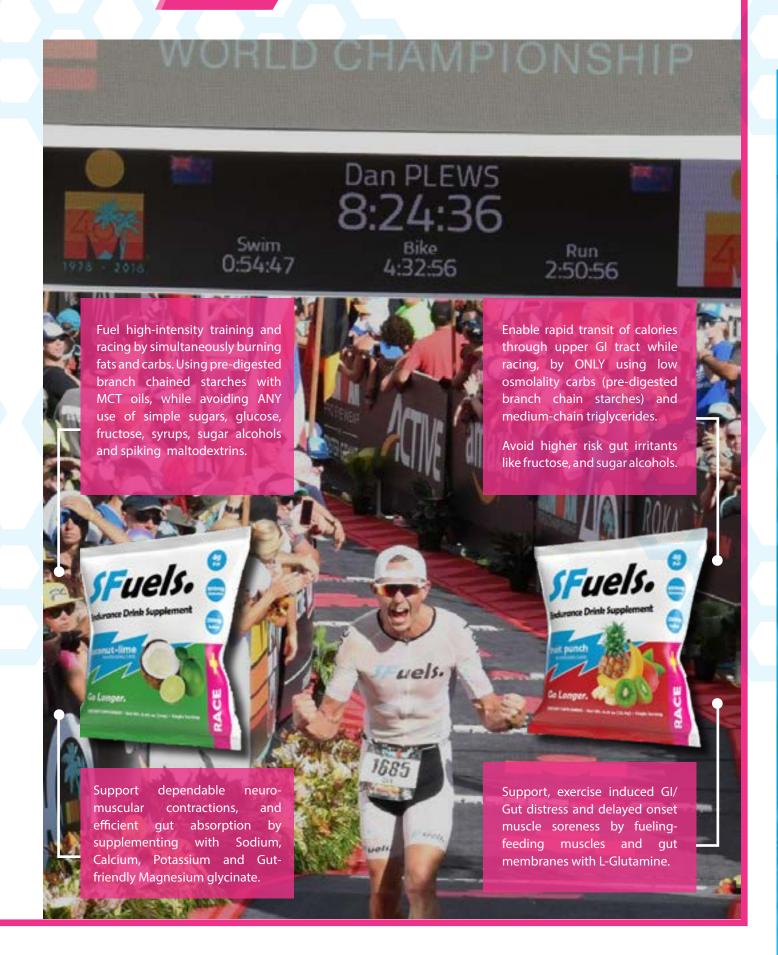


	SFuels Race+ (Concentrate) Storage	Water (Only) Storage		
100Mile Bike	Add multiple SFuels Race+ sachets into 32oz water bottle(s) – to support expected duration and intensity levels on the bike-segment. Mix with Water only bottle/storage, and/or directly sip throughout race.	Cockpit – just water. Refill at aid Stations.		
Marathon or IM Marathon	Add multiple (Relative to your race duration/intensity) SFuels Race+ into a bowl, with 'JUST ENOUGH WATER' to create a gel-like concentrate. Pour the concentrate into as SFuels Soft-flask. Carry your softflask into your Tri-suit, race suit, race-belt/vest. Squeeze some concentrate into water cups (or mouth with water) at aid-stations and drink.			
Ultra-Marathon 50-100Miler	supportable aid-stations in the race – then have replenishment Shuels Race+ I			

Train and test your fuel-water storage plans against expected race day intensities, temperature, elevation and duration.



SFUELS RACE+





RAPID RECOVERY

High volume training, longer, more frequent sessions and intense racing can overwhelm our physical and emotional health. Progressive improvement during these times of high-stress, can be supported through targeted nutrition and quality recovery. But left unchecked here's what can happen -

... SPIKES UP

- 1 Oxidation
- 2 Inflammatory Mediators
- Muscle-tissue injury
- 4 Cortisol
- 5 Sympathetic Nervous Response

... DROPS DOWN

- Immune Resistance
 - Gut 7
- Parasympathetic
 Nervous Response

 8
 - Heart **9** Rate Variability



WHAT SPIKES UP?





WHAT DROPS DOWN?

6 IMMUNE RESISTANCE

Studies on ultra-marathon finishers, have shown >25% incidence of upper-respiratory tract infections within two weeks post race. Research suggests a decreases in mucosal immunity (IgA) following marathon events. Again, high consumption of sugar (bars, drinks, gels in training/racing) reduces vitamin C transport into white blood cells impairing immunity.

PARASYMPATHETIC TONE

As the sympathetic nervous system dominates over the parasympathetic system, bodily functions like slowing of the heart rate (rest), Gut/Gl motility and secretions become weakened and disorderly.

GUT INTEGRITY

Exercise of longer duration, shunts blood from the Gut, creating a hypoxic state (no blood), increasing gut membrane breakdown and the flow of toxic inflammatory compounds into the blood. Heat, simple sugars, dehydration will all increase this.

THE ULTRA GUT.

CLICK HERE **HEART RATE VARIABILITY**

As sympathetic nervous strength prevails, and parasympathetic tone declines, the variability of time between each heart beat decreases – which becomes a key proxy or bio-marker, for athletes looking for early signals of physiologic imbalance, and overreaching in training and lifestyles.

LIVE Better

SFUELS REVIVAL

Endurance Recovery Drink Supplement

Support the reduction of leucine (protein) muscle oxidation, from high volume endurance exercise by raising levels of B- hydroxybutyrate

Replenish lowered sodium levels, commonly seen in low-carb endurance athletes.

(BHB) ketones.

Using highest quality whey protein isolate, support lean-body mass, in seeking to reduce the damaging effects of high-volume eccentric muscle contractions (running, cycling etc.).

Whey protein has also been highlighted for improving immune response, and blunting cortisol responses from training stress.

Support muscle-torque (power), lower delayed onset muscle soreness and inflammation, through high dose L-Glutamine supplementation.

Support the reduction of exercise heat-trigged damage to the gut membrane, by rapid membrane repair, through L-Glutamine.

Eliminating blood sugar spikes, stalled fat-oxidation and heightened inflammatory markers through avoiding the use of sucrose, glucose, fructose, maltodextrins.

Maintain favorable gut bacteria, by avoiding the use of all sugar alcohols like sucralose, that have shown to disrupt the gut microbiome.





Live

Prime metabolism for training and accelerate Rapid-Recovery for High-Load Training Blocks

Train

Train your
Fat-Oxidation
Efficiency &
Endurance

Race

Optimize
Simultaenous
Carb-Fat Oxidation
for high-intensity
performances

TRAINING-PREP

1 SFUELS LIFE BAR 1-2HR PRIOR

TEST: Mental and energy readiness (desire) for training.

ACCELERATED RECOVERY (POST TRAINING OR RACING)

30MINS POST: SFUELS REVIVAL 1 SRV

BLEND: MILK OR WATER/CREME + ICE

TEST: Lowered muscle soreness, full range-movement 1-2 days post training.

AEROBIC SESSIONS (1-3HRS)

SFUELS TRAIN 1 SRV/HR

(>3HRS)

BEYOND 3 HOURS SWITCH TO

SFUELS RACE+ 1 SRV/HR

MIX SFUELS TRAIN IN 160Z OF COLD WATER.

TEST: Consistent energy/power through aerobic endurance training sessions.

RACING & HIIT TRAINING SESSIONS

PRE-HIIT SESSION/RACE: NO CARBS 2HOURS PRIOR

DURING HIIT/RACE: FIRST 30 MINS - SFUELS TRAIN

>30 MINS SFUELS RACE+ 1 SRV/HR*

MIX SFUELS RACE+ IN 160Z OF COLD WATER. *FOR OPTIMAL RACE SERVING DOSE/HR, DOWNLOAD SFUELS

OPTIMZATION GUIDE

TEST: Strong performance, no Gut/Gl distress through HIIT sessions or Racing.



QUICKSTART SAMPLE PACK

Start your SFuels Quick-Start today with our QuickStart SFuels sample pack. Scan the QR code to buy your discounted SFuels Pack.



SFUELS LIVE: VIDEO CONTENT

WATCH VIDEOS - CLICK HERE

Dave Scott

6X Ironman

World Champion





Dr. Dan Plews
Ironman AG
World Champion



ENDURE IQ

Endure IQ breaks down the science of endurance performance into practical information through online education courses and learning communities which will empower you with the understanding needed to find your sweet spot.







SFuels.

The information documented within this guide, and on SFuelsgolonger.com is not provided, nor intended, to cure, treat or diagnose any disease. The provision of this information and products from SFuels should not be substituted for consultation (face to face) or medical advice, from your preferred health care professional and/or general physician.

The information provided in this guide, and on SFuelsgolongercom are based on the opinions of SFuels, unless otherwise referenced and/or linked. These guides are provided as a means to share the experience and knowledge of SFuels to the interested endurance-sport community.







LIVE Better TRAIN
Smarter

RACE+

Faster