



## FIT Health & Fitness Review!

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April 2007

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### FIT Client of the month! Kate Corbin

Client Name: Kate Corbin  
Age: 16

Goal: To Win 2007 Schoolage National Championships.  
Qualify for 2008 Junior World Team.

Results: 3rd place Schoolage Nationals '06,  
3rd place Junior Nationals '07

Likes: Back Squats, drama, knitting  
Dislikes: Moving fast in between sets.

PR Clean: 87kg (191lbs)  
PR Snatch: 63kg (138lbs)  
PR Back Squat: 130kg (286lbs)!  
PR Front Squat: 113kg (249lbs)!

KATE CORBIN, WEIGHTLIFTER  
By Julia Duperrault - Staff Writer for Los Altos High School

Men and women in workout clothes call greetings to sophomore Kate Corbin as the door to FIT gym in Rancho Shopping Center swings closed behind her. She stows her bag in a locker in the back and begins warming up for her nightly two-hour training session. It was the summer of 2004 when Kate decided to get in better shape and joined the children's aerobics and lifting program at FIT, the gym where her mom worked out. She soon grew interested in weightlifting, and within a few months, she left the children's program and instead joined FIT's Barbell Club, a group of about a dozen adults and teens who spend several evenings a week practicing [Olympic-style] weightlifting together.



But that was more than two years ago. Kate is now ranked fifth in the nation in the women's school-age category, for lifters under age 17. Among school-age lifters in her weight class, she is the U.S. champion. Her record for the snatch, in which the lifter must pick up the weight and raise it over her head in a single continuous motion, is 63 kilograms (139 pounds). Eighty five kilograms (187 pounds) is her record for her favorite event, the clean-and-jerk, in which the weight is raised from the floor to shoulder height, held there briefly, and then pushed overhead.

"The best part is making a personal record," Kate said. "You're just happy for a week, because it takes a long time to work up to your old records and to beat them, and you have to be completely on top of it. Everything has to come together at the right moment."

Kate competes in meets every couple of months, mostly within the Bay Area.

"In the competitions I get really freaked out because I want her to be successful and so I worry about it," said Kate's dad, Dave Corbin. "She doesn't have this problem, but I do."

Kate has none of her father's nerves, however. After about 15 meets, she has the process down pat.

"You have an hour period, and you can weigh in as many times as you want, if you're the wrong weight," Kate said. "Then you eat something afterwards, because you've probably been starving yourself."

Competitors then warm up and are first allowed three attempts at the snatch, and then three attempts at the clean-and jerk.

"You go out and you try to lift something, and if you make it, you put more weight on the bar. If you don't make it, you take it again," Kate said. "Afterwards they hand out medals, and you collapse on the floor," she added with a laugh.

Last summer, Kate won a bronze medal in the School Age Nationals in Detroit. The experience was her most memorable in two years of competing.

"There aren't a lot of people around here who do [weightlifting]," Kate said. "It was amazing to see so many girls involved, and boys as well. There were more people than I could have imagined. It was awesome."

While Kate loves weightlifting, she sometimes finds it challenging to be one of few females in the area who take

part in the traditionally male sport.

"It's not so much the actual people who participate in the sport, as the people who have the image associated with weightlifting," Kate said. "When I started lifting, probably most of the people I knew assumed that weightlifters looked like Arnold Schwarzenegger."

Though she often feels frustrated, Kate stands by her approach of surrounding herself with supportive people and waiting for the stereotype to fade away.

"Actually meeting the people, it's surprising how normal these women [in Barbell Club] are," Kate said.

In the 10 hours each week that she spends training at FIT, Kate has become close with many of the other lifters in Barbell Club.

"I like hanging out with everyone there. There's some really wonderful people, cool people to hang out with," Kate said.

Kate feels it is her strenuous training regime at FIT that has allowed her to become a champion.

"She works hard all the time," said Rob Earwicker, Kate's coach.

Before moving to the United States from England, Earwicker trained as a full-time weightlifter at the British Olympic Training Center.

"Rob is really supportive and he really cares about his lifters and the sport," Kate said. "He's really dedicated."

With Rob's help, Kate hopes to qualify for Junior Worlds, a world championship event for weightlifters under age 20. A chance to compete would be "amazing," Kate said. To achieve her goal, she needs to continue training hard over the few years.

"The qualifying totals are ridiculously high," Kate said.

But with hard work, both Kate and her coach believe she has a good chance of making it.

"She just keeps going, and keeps getting better at it," Dave Corbin said. "It's the most amazing thing, I think."

## **The Unsupervised Industry - by Johnny Nguyen**

You can learn a lot about various things on Internet forums. And it seems there are forums dedicated to all topics from earth to heaven – marine life to astronomy. Just use your imagination (in fact, even forums on imagination exist, which discuss anything from creative projects to fairies). The value of these forums is in their members, not only because they often include experts but also because they are full of real-world people who have varying levels of experience in their perspective areas of passion.



Unfortunately, most forums are open to anyone who is willing to register, often for free, to become a forum member. And many of these contributing members remain anonymous, mostly to preserve a sense of security when posting publicly what they feel might be taken as useless banter, derogatory remarks, emotive argument, or flat-out misinformation -- and often it is. As a result it's best to hide one's true identity because internet "flaming" can be quite embarrassing.

You've been told: Don't believe everything you read. It's especially true on internet forums. But if you read critically through the numerous threads and posts on any forum, you may find some truly useful information on a topic you seek to know more about.

As a trainer, I spend some time on a few fitness forums, subscribed to by both lay and professional members, mostly to learn about new trends, controversial subjects, and what people are generally discussing. You'd be amazed at the huge discrepancy in quality between forums. And within each forum you'll find varying degrees of knowledge. After a while, you'll know the forums to revisit and which to avoid.

It is through these forums that you'll see the problem with the Professional Fitness Training industry: It has no regulation. As such, people of all background can become personal trainers through any of the hundreds of certification courses.

Joe Schmo, who is recovering from a divorce, might decide that he needs a career change, spend his last pennies on a weekend course, and become a certified personal trainer. Or Sally, who is young and has no talent other than taking coffee orders at the local café shop, might decide to try personal training for extra income while putting herself through college. She can take a certification course for \$99, paid on-line. Unfortunately, most paying-clients don't know the difference between various certifications, much less the weight they carry. Qualification, therefore, is judged solely

on interactions with their trainers, and often their looks. Bodybuilder Bob, for example, might appear to be a highly qualified personal trainer only because of his bulging biceps, mountainous traps and the awkward gait. (Just because someone is good at something, people immediately assume that this person is the qualified teacher. It is an illogical assumption that many of us make.)

Many of these certifying agencies follow their own protocols, because they can. No regulation means ultimate freedom to create any business agenda and then choose any means to meet it. The commercial interest carried by many of these certifying agencies often exceeds and sadly buries their program quality. So the result often is students who pass certification courses with a knowledge base that is no better than that obtained from a five-dollar magazine bought from a convenient store. In addition to my degree in Sports Medicine, I've taken a few different fitness certification courses in the past, so I know some of what is available to Joe Schmo, Sally and Bodybuilder Bob. They ain't impressive.

Not all certification agencies produce mediocre fitness trainers, however. There are a few good ones. But to the average client, the certification titles at the end of the trainers' names are all the same. And there are a lot of them. That is the problem. We now have a huge fitness industry full of "professional" trainers, and it resembles a grab bag full of coins of the same size but all with vastly different values.

Nowhere is this more apparent than on various fitness training forums, where the contributions can vary from information that is evidence-based and research-backed to advices about the use of voodoo magic tricks on a stability ball. I'm almost embarrassed while reading some of the postings, but I'm also damn proud of the group of trainers I get to work with. No trainer at FIT believes in implementing exercises simply because they're trendy, and no one here believes in voodoo magic exercises.

Generally, it is not so much the certifying agencies that determine what kind of trainers are produced. Their certifications simply open doors to jobs. It is mostly the trainers themselves that determine what kind of trainers they will become. I have seen personal trainers who have exercise science degrees but make better competitive eaters and closet sloth than they do trainers, and I have met other trainers who have no formal education or certification but make the best trainers that money can buy. Like in almost any professional field, it is the real-world experience and the education that continue long after formal schooling that build the professional.

For the record, it is in my opinion and observation that a formal education makes it easier for a trainer to become skillful at his or her craft; theoretical concepts are readily understood, and abstract thinking can be transformed to practical application. These are the basis for the magical connection between teacher and student. But, this skill is certainly not exclusive to those with degrees in the sciences, but is attainable by any trainer with an open-mind for all methods, a desire to learn continuously, and the intrinsic motivation to become masterful with the teaching.

In reading through forums, good or bad, I find a little bit of comfort in knowing that all the members may eventually become better trainers, simply because they are participating on fitness forums... that is, if they don't become competitive eaters or sloth, and if they continue their real-world experience and education outside of the virtuality of Internet forums.

### **"Lactic Acid: Friend or Foe?" by Scott Kolasinski**

Lactic Acid: Friend or Foe?

The short answer to the above question is, lactic acid is a friend, and always has been, but you have to really get to know it.

Lactic acid has been blamed for fatigue, delayed-onset muscle soreness, and cramps. A closer look at the research has shown that this is not the case at all. In fact, once lactate or lactic acid [used interchangeably in this article] are metabolized, they are actually a preferred fuel source for quick and intense activities that we perform during intense exercise.

Exercise and Lactate

Lactate is constantly being produced by our muscles and organs, but in very small amounts. Here is how it happens:

Glucose enters a cell and gets broken down via several enzymatic steps and using various electron carriers into a 3-carbon molecule called pyruvate. One enzyme, lactate dehydrogenase (LDH), can convert pyruvate into lactate in one easy step with or without oxygen. From here, the presence of oxygen will determine how easily the lactate molecule will be produced into energy. In the presence of oxygen, a lot of lactate can be converted into energy. Without oxygen, lactate may still be converted into energy, but it is more dependable on several other factors (listed



below). Because of how energy efficient lactate formation occurs, there is a lot of potential for lactate to be a preferred energy source.

During mild exercise, sufficient oxygen is available to the cells and the rate of lactate removal equals its rate of formation, so that there is no accumulation of lactate. This is dependent upon:

- the type of muscle fiber that is exercising (more lactate is produced in fast-twitch muscles during intense exercise than slow-twitch muscles)
- the concentration of monocarboxylate transporters (which play a major role in the regulation of intracellular pH and lactate concentration during intense muscle activity)
- the concentration and isoform of LDH
- the overall ability for tissues to create energy from other energy systems, such as the oxidative system.

Larger than normal amounts of lactate are produced during the metabolism of glycogen (called glycolysis) primarily when insufficient oxygen is present (i.e. when you are huffing and puffing, trying to catch your breath!). Contrary to popular belief and older textbooks, lactate is not a toxic byproduct or waste-product of metabolism accelerated by exercise. As mentioned earlier, lactate is produced at rest in a number of organ systems and can serve as a valuable source of energy. When sufficient oxygen becomes available via rest or a decrease in exercise intensity, lactate is reconverted to pyruvate for use as energy. In addition, lactate and pyruvate formed in muscle during exercise can be used to manufacture glucose by a process called gluconeogenesis. This "extra" glucose supplements any existing blood glucose and muscle glycogen.

#### Lactate: Fatigue, Soreness and Cramps

Muscle fatigue is not due to "lactic acid build-up" in a muscle like motor oil in a car. During the formation of lactate, there is an increase of positively charged hydrogen ions from the breakdown of the energy-producing molecule called adenosine triphosphate (ATP). The positively charged hydrogen ions, which increase the acidity of the blood, can interfere with the muscle contraction process and the efficiency of the enzymes involved in energy production. Certain enzymes are more efficient at a better pH. As such, our muscles perform less efficiently, creating less efficient muscle contractions and we feel fatigue.

Lactate is not the cause of muscle soreness, since blood lactate returns to normal within an hour post-exercise. Delayed-onset muscle soreness is caused by the mechanical injury and secondary post-exercise inflammation.

Most muscle cramps, on the other hand, are caused by muscle nervous receptors that become overexcitable with muscle fatigue.

#### Lactate and the Athlete

Lactate does not accumulate significantly until exercise intensity reaches about 55% of the healthy, untrained subject's maximum oxidative capacity. The rate of lactate accumulation now exceeds the rate of removal and fatigue is initiated. The intensity of exercise has to be decreased if the activity is to continue. This threshold is called the blood lactate threshold or OBLA (Onset of Blood Lactate Accumulation).

Many tissues, particularly skeletal muscles, continuously produce and use lactate. Blood levels of lactate reflect the balance between lactate production and use. An increase in lactate concentration does not necessarily mean that the lactate production rate was increased. Lactate may increase because of a decreased rate of removal from blood or tissues.

Lactate production is proportional to the amount of carbohydrates broken down for energy in the tissues. Whenever you use carbohydrates, a significant portion is converted to lactate. This lactate is then used in the same tissues as fuel, or it is transported to other tissues via the blood stream and used for energy. Rapid use of carbohydrate for fuel, such as during intense exercise, accelerates lactate production. Temporarily, lactate builds up in your muscles and blood because it can't be used as fuel fast enough. However, if you slow down the pace of exercise or stop exercising, the rate of lactate used for energy soon catches up with the rate of lactate production.

Elite level endurance and intermediate-anaerobic athletes are able to perform at such a high intensity level because:

- Their OBLA occurs at a higher percentage of their aerobic capacity.
- They can remove lactate more rapidly or convert it more efficiently to glucose.

Therefore, if you can increase your OBLA, and utilize lactate more efficiently, you will increase your overall fitness level. How do you do this?

#### Lactate and Improving Your Fitness Level

Proper training programs can speed lactic acid removal from your muscles while exercising. This can be achieved by combining high intensity, interval, and long distance/endurance training.

To improve your capacity to use lactate as a fuel during exercise, you must increase the lactic acid load very high

during training. Training with a lot of lactic acid in your system stimulates your body to produce enzymes that speed the use of lactic acid as a fuel.

High intensity interval training will cause cardiovascular adaptations that increase oxygen delivery to your muscles and tissues. Consequently, you have less need to breakdown carbohydrate to lactate. Also, better circulation helps speed the transport of lactate to tissues that can remove it from the blood.

Because resistance training utilizes carbohydrates primarily as energy, high-intensity resistance training that produces high levels of lactate, such as certain Crossfit or weight-circuit programs, are an effective way for you to improve your OBLA, ability to utilize lactate for energy and improve your overall fitness level. While training in these types of training, for optimal lactate tolerance, you should go as fast as possible, while still accomplishing the goals of the workout, such as still moving a weight through its full range of motion, completing the needed number of reps, etc.

Long-distance or endurance training causes muscular adaptations that speed the rate of lactate removal. Adaptations of endurance training increase the blood supply and the mitochondrial capacity of a trained muscle. Mitochondria are structures within the cells that process fuels, consume oxygen, and produce large amounts of ATP. A larger muscle mitochondrial capacity increases the use of fatty acids as fuel, which decreases lactate formation and speeds its removal.

Thus, many long-distance training programs incorporate different training modalities throughout their overall training program in order to allow the body to develop a better ability slow lactic acid production from carbohydrates and to enhance tissues ability to use lactate as fuel.

#### Summary

Lactate is an important fuel for the body during rest and exercise. It is one of our most important energy sources.

If you wish to quickly improve your cardiovascular level and overall fitness capacity, you must train at a high intensity. High-intensity speed training is uncomfortable because it may result in soreness, puking, dizziness or all of the above...but then again, why would anybody not train if they didn't feel like this now-and-then. This type of training will improve your body's ability to use lactate as an energy source under strenuous exercising conditions.

Carefully constructed workout programs will yield positive results; while training too often like this will result in

overtaining or some sort of injury. Do not forget to make sure you recover properly to allow those adaptations to happen.

Therefore, get the most out of your time while exercising with the most health benefits and “teaching” the body to adapt to using lactate by training hard!

If you have any questions about this article, please email me at [scott@focusedtrainers.com](mailto:scott@focusedtrainers.com).

Until next time...

### **"Motivation" by Gabe Rindaldi, FIT General Manager**

Are you motivated to reach your training goals?

Many clients come to F.I.T. and tell us they need some motivation to help them reach their health and fitness goals. As professional trainers we possess the knowledge in exercise science to guide our clients on this journey. However, the training industry is about so much more than simply exercise science. This article will examine the issue of motivating clients.

About 10 years ago I was working as a trainer at 24 Hour Fitness. I went to a corporate training seminar and I remember the speaker telling us that it was impossible to motivate another human being. At the time I wasn't sure if I believed this, but I never forgot it. This past week several staff members from F.I.T. attended the IHRSA (International Health, Racquet, and Sportsclub Association) convention in San Francisco. I sat in on different talks where the issue of motivation came up. One speaker (Greg Lappin) asked for a show of hands from people who thought it was possible to motivate others. Approximately 75% of the people in the room raised their hand. Mr. Lappin went on to explain that he believes it is possible to motivate others, but that it never works. Another lecture given by Bill Parisi was on the topic of motivating kids and young adults to exercise. At one point Mr. Parisi asked for a volunteer. This guy came up to the front and was told to do a vertical jump and mark the wall with a piece of chalk at the highest point of his jump. Next Mr. Parisi put a 100-dollar bill on the wall about 3 inches higher than his vertical jump. He said if you touch the bill, then it's yours. The guy took off his dress shoes (losing about 2 inches in the process) and then jumped up and touched the bill. He earned a quick 100 bucks and Mr. Parisi explained if there is a big enough "Why", then you will figure out a "Way" to



get it done. It was an excellent lecture and everyone was "fired up" at the end of the talk. One final comment I remember from this convention was a speaker mentioning that people are much more likely to do something out of a fear of failure. After 10 years in this business, a few college degrees, lots of seminars, and thousands of training sessions I have my own opinions on this topic.

As boring as it is we need to start off with a few definitions. Let's look at the difference between motivation and inspiration as defined by the American Heritage Dictionary.

Motivation – The state of being motivated.  
Motivate - To provide with an incentive; move to action; impel.

Inspiration - Stimulation of the mind or emotions to a high level of feeling or activity.  
Inspire – To fill with enlivening or exalting emotion.

Motivation is from an external stimulus provided by someone like a personal trainer. Inspiration is something that happens internally from a conscious decision to positively change. Motivation causes action by providing a reward or fear of failure. As the speaker at the IHRSA convention mentioned, fear of failure is the more powerful motivator. Inspiration, involves our feelings, passions, and genuine love of the process and / or destination. Motivation is an external stimulus that is tough to maintain over the long haul. Inspiration is self-sustaining and lasts much longer due to the emotions involved. Inspiration, not motivation, is what allows people to achieve greatness.

I personally got involved in two different abdominal contests last year. The first contest was with the other male trainers at F.I.T. I wanted to win, but the reward of winning wasn't that great and I didn't have any fear of failure because everyone knew certain trainers are always very lean (yeah you Johnny). The second contest I did was with the guy who cuts my hair. I've known this guy for over 10 years and he's a friend, but I couldn't stand the thought of losing a contest related to exercise when my industry is exercise and his is hair. I had a big fear of failure so it pushed me to a much higher level. I lost the first abdominal contest and won the second. The difference was the motivation or more specifically the type of incentive related to the motivation. I believe the speaker was right; people are more likely to do something out of failure. However, I didn't maintain my state of leanness after the contests because I lack the inspiration; i.e., the passion, feelings, or conscious decision to do so in part because I don't think it is healthy to be that lean long-term.

Enough about me, let's bring this back to the issue of

motivating clients. It is true that trainers motivate clients by providing some sort of incentive to reach their goals. This incentive might be putting their name up on the white board next to other clients who have done the same workout. Another example might be educating the client about the benefits of exercise so that the client has a reason to keep exercising or fear of failure if they quit. Now, as bad as it sounds in my experience these techniques only work if the client wants them to work. In other words, if the client has some inspiration (has made an internal decision to change), then the training that we do with clients helps them achieve greatness. If a client lacks inspiration, but comes to us and expects us to provide all the external motivation and training knowledge, then I believe the results will be sub-par until that client gets inspired. Perhaps the better title for this article would be, "Are you inspired to reach your training goals?" If you are inspired, then I can promise you we will do our part to get you to your goals. If you are not inspired, then it is important to understand the information in this newsletter article in an attempt to figure out what will light that fire within you.

### **Hold Your Breath - by Johnny Nguyen**

My internship in cardiac rehab at the Danville Regional Medical Center in Virginia taught me, among many things, the importance of always breathing during exercise. Continuous breathing during exertion prevents a dramatic rise in blood pressure, causing increased intra-abdominal pressure and, more concerning to the cardiac patient, intra-thoracic pressure, which is undesirable as this vasal and anatomical pressure puts a dangerous load on a diseased heart. "Breathe," we would encourage the cardiac rehab patient, "you should always breathe through your exercises."

The problem is that through the years this medical advice somehow leaked out of the clinic, down the hall, out the front door and to rest of the exercising world. Everyone is told to always breathe through all exercises, to never ever hold the breath during exertion because it is dangerous.

Amazingly enough, for millions of years before this medical advice was ever uttered people have survived this "dangerous" breath-holding maneuver during exertional activities such as picking up heavy objects, throwing stones, hunting game, jumping obstacles, horsing around with playmates, bowel elimination, or doing something as simple as standing up from a squatting position. If you were to ask any father to pick up his child from the ground,



trained or untrained he would reflexively hold his breath momentarily.

Is this because he has no clue that picking up his son could cause his heart to explode? No (the son will effectively do that to the father when he turns a teenager). Rather, it's because the body is smart enough to instinctively increase intra-abdominal and intra-thoracic pressure to optimize spinal stability. It is a built-in safety system. This breath-holding, or the Valsalva Maneuver, helps create a rigid corset around the spine to protect it from high-force actions such as heavy lifting or high-velocity movement. It has been shown that the Valsalva Maneuver helps reduce spinal stress during high-force situations, and that exhalation during similar periods increases the risk of spinal injury.

This Valsalva Maneuver also facilitates the increase in force output and the accuracy of quick actions, such as throwing, kicking, striking, lifting, shoving and jumping, as well as control during delicate and precise tasks such as archery and marksmanship (in which shooting occurs not just during a brief period of breath-holding but also exactly between heart beats, as to avoid unwanted perturbation).

While it is wise for patients with hypertension or heart disease to follow the clinical advice of continuous breathing during exercise (even though exercise should generally be modified to reflect the clinical condition of this population in the first place so that load forces remain low), it is appropriate for the average person to briefly adopt the Valsalva Maneuver during high-load activities.

Essentially, it is advisable that breath-holding should accompany and even precede high efforts, followed by controlled exhalation. This brief breath-holding may increase blood pressure slightly beyond what the high-force maneuver itself already does, but the potential increase in power output and motor accuracy along with, and more importantly, the protection afforded to the spine when employing the Valsalva Maneuver are well worth breaking the long-held concept that "you should always breathe through your exercises."

## **"Finding the Right FIT" – Chris Reed MPT, OCS, ATC**

Are Your Running Shoes Right For You?  
Chris Reed MPT, OCS, ATC  
Agile Physical Therapy



The spring running season is upon us. Time to dust off the old running shoes and donate them to the FIT running shoe drive. "Wait," you say, "I just bought those shoes last October! I only have maybe 100 miles on them." Well, your shoes will be shipped to One World Running in an effort to promote an awareness of health, fitness, and nutrition around the world. Now that you have donated your shoes to a great cause, it is time to buy yourself a new pair. But before you do, let's discuss how shoes are designed, how to pick the right running shoe for you, and go over a few guidelines on when to replace your shoes. Remember, it is not always about how they look.

### Shoe Design

It is important to understand some of the terminology used to describe feet and why different designs work for different feet. The first thing we need to discuss is what happens when your foot hits the ground. Most recreational runners have some sort of a heel strike as the initial contact of the foot with the ground. This is often on the outer edge of the heel. In order to absorb the shock as the rest of your foot hits the ground, your arch lowers. This is called pronation. As your weight shifts onto the ball of your foot, your arch is reformed to provide a rigid lever arm to propel yourself forward. This is called re-supination. You will often hear someone say that they are an overpronator. This means that once their foot has gone into pronation, they never re-supinate as their weight moves onto the ball of the foot. This is commonly seen in someone who has a very low and loose arch. In this case most of your shoe wear will be on the medial side of the shoe's forefoot. Less commonly someone will be a supinator. This means their foot does not go into pronate to absorb the shock of the foot hitting the ground. This is commonly seen in someone who has a very high and rigid arch. In this case most of your shoe wear will be on the lateral side of the shoe's forefoot. If you have even shoe wear across the forefoot, then you likely have a neutral gait pattern.

Another way to determine your foot type is the Wet Test. To perform this test, you must wet the bottoms of your feet. Then stand on a piece of paper or cardboard. After a minute, step off and look out your footprint. If there is not much of a curve to your arch, you have flat feet. If there is a very large curve to your arch, then you have high arches. If there is just a mild curve, then you have a neutral arch.

Next we need to go over the different components that make up a shoe. The first is called the last of the shoe. This is used to describe the amount of curvature in the shoe from the heel through the forefoot. Shoes come in three different lasts: straight, modified, and curved. A straight last shoe has lots of support on the inner side of the shoe. These are generally good shoes for the severe overpronator, as they will provide the most support of the arch. A modified last shoe has a slight

curvature between the heel and forefoot of the shoe. This is the most common type of shoe on the market. These shoes are good for most foot types and often there is extra material added to the midsole of the shoe to restrict overpronation. We will discuss this more in a little bit. The final type of last is a curved last. This is often found in racing flats due to the lightweight nature of the shoe. This shoe lacks stability and is often good for the supinator foot type as long as enough cushioning is provided.

The upper is the top part of the shoe including the tongue, laces, and material surrounding the top of the foot. It is important that materials of the upper be lightweight and breathable.

The outer sole is what we commonly refer to as the tread of the shoe. It is often composed of a high-grade carbon rubber. A combination of high-grade carbon rubber in the rear foot and a lighter weight rubber in the forefoot is commonly used as well to decrease the weight of the shoe. The surface that you are running on will help determine the make up of the outer sole you will want. In a running shoe the tread is designed for straight-ahead movements, while in cross trainers the tread is designed more for lateral movements.

This midsole is the section of the shoe between the upper and the outer sole. The midsole contains either ethylene vinyl acetate (EVA) or polyurethane foam. EVA is a soft, lightweight, and flexible. It can be formed into different densities within the same midsole. Polyurethane is more durable and stable than EVA. It provides excellent shock absorption, but is firmer, heavier, and stiffer than EVA. This is the area that the shoe companies have spent the majority of their time researching. The midsole is where the intrinsic stability that controls pronation is built into the shoe. Companies use all different types of materials to achieve this including denser foam (usually indicated by a darker color), Kevlar, plastic components, multi-compartment air bags, and various gel materials.

#### Shoe Guidelines

Now that we know about determining your foot type and how the shoes are put together, it is time to discuss some tips for picking out the correct shoes for your summer runs. First and foremost, it is important that you go to a specialty running shoe store. The salespeople at these stores understand runners and are knowledgeable about running shoes and running styles. Many of them can do a quick evaluation of your gait pattern and recommend the appropriate shoes for your foot type. It is a good idea to bring your old shoes so the salesperson can look at them to evaluate your wear pattern. Make sure to shop near the end of the day or after a workout when your feet have expanded. Don't forget to bring the socks you would run in as well as any orthotics you may wear to get a true fit of the shoes.

You want to make sure you get a shoe that fits properly. The shoe should have enough room in the toebox that you can press your thumb between the end of your longest toe and the end of the shoe. There should be enough room for the widest part of your foot to fit snugly in the shoe. You don't want it to be too tight nor too loose as this could result in

blister formation. Your heel should not slide up and down as you walk. You should not have any pressure points on any area of the foot. It is recommended that you take the shoes for a test run either in the store or down the block from the store to make sure they feel good while running.

Now that you have your new shoes, make sure to break them in properly. It is recommended that you limit your first run in the new shoes to an easy 3 miles and to keep the distances short during the first 100 miles. Most of all do not run a race in your new pair of shoes until they are broken in.

Your shoes have a lifespan of between 350 and 550 miles. It is also important to remember the EVA material used in the midsole has a shelf life of between 6 and 9 months prior to beginning to break down in the box. So remember, before going out to purchase your new MoGo's, take those old worn out shoes out of the closet and bring them down to the shoe drive at FIT. The shoes that are unsuitable for running in will be sent to Nike to be ground up and made into running tracks and playgrounds through the Reuse-a-Shoe program. Those that still have a little life left in them will be sent to those in need around the world.

Happy Running!!!

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For more information regarding FIT:  
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