

MODERN

Stretching

by Taylor Tollison, NASM-PES, YSA 1, YFS 1

Notice

The exercises contained in this stretching guide should not be implemented until you first consult with a physician. If you have any prior injuries to any part of the body that might be exasperated by an exercise or stretch don't proceed. Be sure you are in good physical condition and use common sense safe practices while using this stretching guide. These routines are not meant to take the place of exercise regimes that your doctor, athletic trainer, or physical therapist may have prescribed.

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ABOUT US

Taylor Tollison graduated from the University of Utah with a Bachelors degree in Exercise and Sport Science. While at the University Taylor took coursework in Exercise Physiology, Sports Nutrition and other exercise related coursework. Since graduating Taylor has continued to significantly expand his knowledge of training outside of his college coursework.

He is a Performance Enhancement Specialist through the National Academy of Sports Medicine. He recently achieved the Youth Speed and Agility Specialist Level 1 and Youth Fitness Specialist Level 1 through the International Youth Conditioning Association.

After his university studies, Taylor has worked with soccer athletes of all ages, genders and varying skill levels. In addition to training, you might have seen his articles in:

- In the Net
- Performance Conditioning Soccer
- Utah Youth Soccer Association
- Michigan Youth Soccer Association
- Cal South
- Ohio Youth Soccer Association
- Oregon Youth Soccer Association

He also owns and provides content for the popular soccer training site, www.elitesoccerconditioning.com, www.youthsoccerskills.com, www.elitesoccerfitness.com and www.stretchingworld.com. Taylor started by providing soccer fitness and conditioning content to 1096 visitors in Jan of 2007 and has grown the site to thousands of visitors monthly.

"I had the opportunity for Taylor to condition my club soccer team. When Taylor trains you can tell he has done his homework. I liked training with Taylor because every time he made us do a drill, he could always tell us how it is going to help us later. He is very educated in what he does, and helped my team as a whole to be faster and stronger. After working with Taylor our whole team started seeing differences in our running form as well. A lot of the time nobody looks forward to conditioning, but with Taylor he would apply the conditioning into games and keep it fun so we always worked our hardest instead of dreading every minute of it."

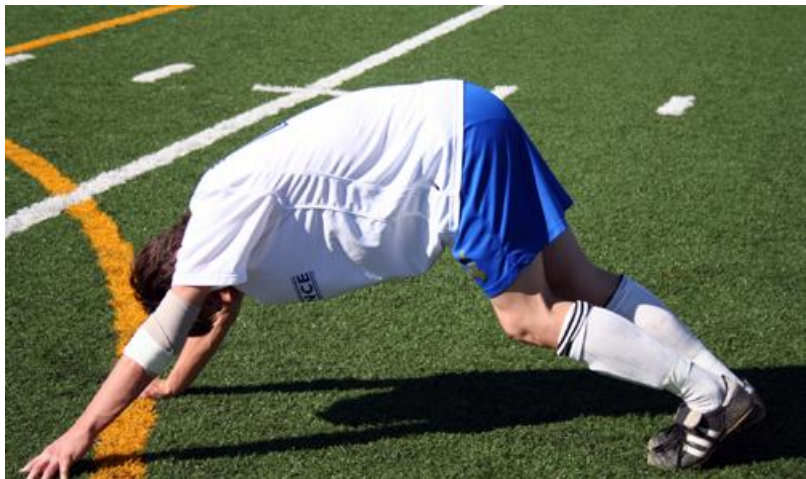
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INTRODUCTION

Anyone involved in soccer knows that flexibility is one of the primary components of fitness. We all know you should stretch before and after practices and games. But old methods still might permeate so it's time to move forward.

I've created this special stretching manual to help outline some of the critical elements of stretching. As a coach or parent who has a fundamental stewardship over these players it's important to get them stretching and stretching right. Helping players understand why and how to stretch will improve their ability and desire to do it on their own.

The strength and conditioning industry evolves like any other industry. Science and trainers move to new levels of understanding and knowledge. This pushes other trainers to new levels as well. Basically, we know the body continues to operate the same but our knowledge on how to train it improves. Ten years from now there will be a whole new set of



new understandings and training methodologies to work from. That being said, many principles seem to have staying power. Many of the principles you will learn in this book you've been taught from a youngster, while other principles have gained popularity over the last few years.

I believe those who teach athletes how to stretch should have this foundational knowledge. This knowledge is important to sell the concept to the athlete so they can do it on their own.

This manual is for coaches, parents and athletes who want guidance on how to stretch. If you are already up to speed on all these principles, which I am sure some are, good job. Help spread the news.

WHAT IS STRETCHING?

Stretching is the process used to elongate muscles for optimal functioning of the body in sports and everyday life. This elongation can happen with no movement as in static stretching, with movement as in dynamic stretching. I even take stretching further. If we include dynamic stretching and warm up we then must understand that it wakes up muscles and warms up the body as well.

The most common types of stretches are:

- Static Stretching
- Dynamic Stretching
- Foam Rolling (self myofascial release)
- Active isolated stretching
- Neuromuscular stretching

For the purposes of this manual we will discuss in the greatest detail static stretching while dynamic stretching and foam rolling will be discussed briefly.

BENEFITS OF STRETCHING

Stretching should be incorporated and taken seriously as part of a regular strength and conditioning program. New methods of stretching and understanding have taken us to higher levels of implementation. With that as a background here are some of the benefits of stretching.

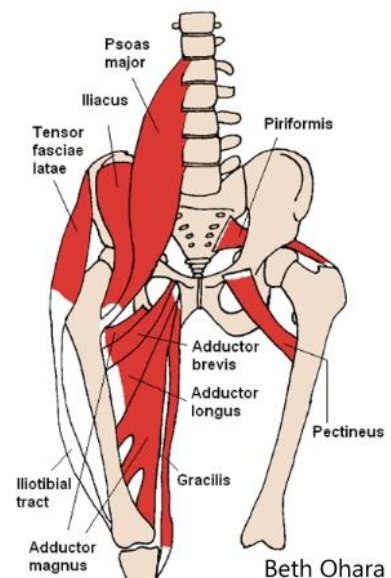
Injury Prevention

There is some debate in the science community as to whether stretching before activity actually reduces injury. One study from 2004 reviewed the impact of stretching on sports injury risk. They reviewed various other studies relating to stretching and concluded there is not sufficient evidence to either endorse or discontinue a stretching routine before and after exercise. (Fradkin AJ, 2006)

I've seen it mentioned multiple times in the scientific literature that there is insufficient evidence to suggest stretching reduces injuries. But don't let this debate fool you. There's got to be something to stretching even if some studies or reviews show otherwise. Can you imagine the sports world without stretching? I can't. And even if some studies showed no injury prevention benefit from stretching, who in their right mind would have the guts to keep their athletes from doing it. It would be irresponsible to stop stretching.

From time to time you will come across information on CNN or Fox News quoting the "newest study" on stretching. For example, just the other day my brother heard a study from a news source that showed no difference in injuries between the group that stretched and did not stretch. The study went on to say the real injury difference comes from switching between the two. In other words, it is when you switch from stretching to not stretching or not stretching to stretching that causes the problem. I have not read the research so I can fully comment on it. But I would add this; if you are not stretching now, START. Don't let little things like that dissuade you from one of the "foundations" of physical fitness.

Here is how I look at it and I think most trainers and people with common sense would agree. Muscles at their optimal length are less likely to cause injury than those that are tight and imbalanced. Let me illustrate. We know that a tight psoas muscle will cause the opposing glute muscle to not fire correctly. This is called reciprocal inhibition. The glute muscle is a primary mover in actions like running. So if the glutes don't fire correctly the hamstrings must take over. Don't you think that if the prime mover is not working correctly and another muscle has to take over that injury is more likely to occur? I do.



As the psoas example illustrated an obscure relationship on how a tight muscle might indirectly lead to injury I would like to illustrate another obscure example. “Sports involving bouncing and jumping activities with a high intensity of stretch-shortening cycles (SSCs) [e.g. soccer and football] require a muscle-tendon unit that is compliant enough to store and release the high amount of elastic energy that benefits performance in such sports. If the participants of these sports have an insufficient compliant muscle-tendon unit, the demands in energy absorption and release may rapidly exceed the capacity of the muscle-tendon unit. This may lead to an increased risk for injury of this structure. Consequently, the rationale for injury prevention in these sports is to increase the compliance of the muscle-tendon unit. Recent studies have shown that stretching programs can significantly influence the viscosity of the tendon and make it significantly more compliant, and when a sport demands SSCs of high intensity, stretching may be important for injury prevention. This conjecture is in agreement with the available scientific clinical evidence from these types of sports activities.....” (Witvrouw E, 2004) Phew. I hope you made it through all that scientific jargon. It’s time to wake up.

Further, there is some evidence to suggest pre-exercise stretching reduces the incidence of muscle strains. But the author mentions there is a need for more studies in this area. (McHugh MP, 2010)

In summary, your goal is to create optimal length in the applicable muscles so that injury is reduced and performance increased. But, there seems to be insufficient evidence to suggest stretching does not reduce injury. You want to be careful with the studies that say stretching does not reduce injury. There are a lot of factors to consider before we say don’t stretch. First, I don’t know of anyone who would say that. I would venture a guess to say many of those researchers would advise to continue stretching. Second, every trainer you ask would say to stretch. Third, consider the indirect and obscure relationships mentioned previously of lack of flexibility and injury possibilities. They are real and should be enough to keep you stretching.

In the end, you must stretch. I point out both sides of the argument using science and scientific reviews. You will come across more that say stretching does not decrease injury. Not for one moment should think stretching is a bad idea.

Modern Stretching Warms up the Body and improves performance

Modern stretching in my mind is far more than just a lengthening of muscles. It also prepares the body for performance by warming up the body and waking up muscles. This process is typically done through dynamic stretching.

Dynamic stretching is a key part of the warm up. The unfortunate part is some find it common for some athletes to skip their warm-up routine. This is a huge mistake. As an aside, one study showed that applying a targeted warm up routine can reduce injuries by up to 30%. (Kirkendall DT, 2010)

The dynamic warm up will prepare the body for the sport by waking up the body. A warm up will increase blood flow, and increase the speed of nervous impulses. (Shellock FG, 1985)

Dynamic stretching can actually improve performance. In a study called “effects of static stretching for 30 seconds and dynamic stretching on leg extension power” they found that first static stretching did not improve performance. But when dynamic stretching was applied, leg extension power actually went up compared to non-stretching. (Yamaguchi T I. K., 2005) This does not mean you should stop static stretching.

To further solidify my point that stretching does improve performance let me provide one more study. The purpose of this study was to clarify the acute effect of dynamic stretching on performance. To not bore you with the details, this study also showed that dynamic stretching significantly improves power output. (Yamaguchi T I. K., 2007)

In a warm up routine I see static stretching putting the muscles to sleep (not literally). There is even evidence to suggest static stretching causes a decrease in strength and power. Again, this does not mean to stop static stretching.

Does stretching reduce muscle soreness?

I went through a couple studies relating to stretching and soreness reduction. One review of stretching and soreness looked at 10 studies and found that stretching does not reduce post exercise muscle soreness. (Herbert RD, 2007)

DOS AND DONTs OF

STRETCHING

Ballistic stretching

Even the body during stretching must follow basic physiology principles. It is that physiology that guides how we stretch. It is also the physiology of muscles that guides how we should not stretch. The body contains muscle spindles. These are reactive to changes in length and velocity. During ballistic stretching you perform bouncing movements which might activate these spindles causing an increase in tension. It does not make sense to stretch a muscle that has activated its tension mechanism. Doesn't it make sense to stretch a relaxed muscle?

Increasing Flexibility too much

Should you continue to increase your range of motion (ROM) or is there a point that too much ROM can be bad. We'll there is a point where too much causes concern. There is evidence to suggest that increases in ROM beyond function through stretching can actually cause injury and decrease performance. (SJ., 2003).

Don't stretch too far

Stretching should only happen to the point of slight discomfort. Going beyond that can cause possible injury. You can usually tell the difference between slight discomfort and pain resulting from injury. The body has a great communication system. Listen to it. If at any point you feel "injury pain" stop immediately.

Don't compete during stretching

Athletes are competitive and want to outperform their teammates. Putting them into a competitive situation with stretching can be dangerous. Each athlete should be measure by his/her own performance and improvement. Creating a competitive environment could cause an athlete to stretch too far beyond the point of slight discomfort. Remember, we are stretching to decrease injuries, not cause them.

THE OLD WAY

In reality, the old way is still the new way of stretching for some. I believe that not enough education has happened to move youth soccer players and coaches along with current strength and conditioning trends. Because of this we have youth players performing outdated stretching and warm up routines or not doing them at all.

The old way looks something like this. Trust me, you'll recognize it. Run around the field a few times followed by static stretching then game or soccer specific warm up like small sided games, shooting, etc. The new method is this in order:

1. Foam Rolling
2. Static Stretching
3. Dynamic Stretching/Warm Up
4. Sport Specific work with the ball

I understand foam rolling may be difficult to perform before a game or practice so do it when you can, especially before your own personal workouts. Foam rolling is great to do while watching TV.

HOW TO STRETCH

This is where the rubber meets the road. We've illustrated some of the fundamental concepts associated with stretching and tried to back it up with science. Now we talk about how to stretch. In the end, you will come away with a greater understanding of stretching and be able to apply stretching with yourself or team in the future.

Should you stretch cold?

I know this will cause many to pause and think is it really true. Because I like you have always been taught to warm up before stretching. You've been taught that stretching cold can cause injury or you won't get any effect from stretching cold. Analogies of stretching a frozen rubber band have caused enough fear to keep most if not all of us from stretching cold. So what is the truth?

Just recently, I've come across information that has shown it ok to stretch cold. In fact, Mike Boyle, one of the most well respected trainers has advocated it. The National Academy of Sports Medicine said this, "An Active warm-up may not be necessary before stretching when an improvement of ROM is the goal." (Range of motion) (Lucett, 2011)

As a personal aside I think this is great news for those practicing fitness of any kind. Many of us possess flexibility deficits. When trying to work on those deficits it's inconvenient to hop on a bike or go for a jog just to work flexibility. But now with this new "modern" information it appears it is ok to stretch without a warm up when ROM is the goal.

STATIC STRETCHING

What is Static Stretching?

As “static” implies it means no movement. You simply get into the stretched position where slight discomfort is felt and hold it for the prescribed time frame and relax.

Why static stretch?

Static stretching must be done the way it’s prescribed or the benefit will be reduced. Stretching follows physiological guidelines. There is a reason you hold your stretch.

Autogenic Inhibition

Autogenic Inhibition protects the muscles from excessive tension. It works when the GTO overrides the effects of the muscle spindles allowing the muscles to relax. If the muscle spindle were to be allowed to fire without inhibition the muscles would tense up creating a poor environment for stretching.

During static stretching it’s desirable to have relaxed muscles. To get the GTO (Golgi Tendon Organ) to fire, thus relaxing the muscle, you must hold your stretch without movement for a given time.

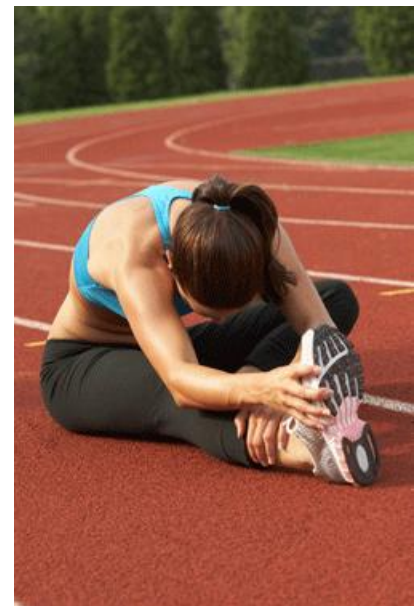
Static Stretches practices to avoid

Rounding the back

Rounding the back can be a very dangerous habit during static stretching. I think most people do it but don’t realize the strain it can put on the lower back. In the stretch seen to the right the female athlete is performing a hamstring stretch. She is obviously rounding the back. It’s better to do this stretch with a straight back to isolate the hamstrings.

Legs over head

Commonly, athletes will perform the legs over the head stretch. Sorry I don’t know what to call it. It is where the athlete has just the shoulders, neck and head on the ground with the back arched over and the legs extended over the head. (see Bad Stretch 2 on next page) If you do this stretch STOP. If you teach this stretch, STOP. If you are thinking about doing this stretch, STOP.



Bad Technique 1



Bad Stretch 2

The Hurdler Stretch-The right way and wrong way

There is a right way and a wrong way to perform the hurdler stretch. In the image to the right it's incorrect to tuck your leg. It is not the sitting up straight that makes the stretch bad, it's the pressure on the knee.

The correct way to perform this stretch is outlined in the stretching program coming up.



Bad Stretch 3

STATIC STRETCHING

GUIDELINES

- 1-3 repetitions per muscle
- Hold each stretch for 10-30 seconds without bouncing.
- Perform static stretching 3-6 times a week.
- Stretch to the point of slight discomfort.
- If you feel any sort of injury pain stop immediately

STATIC STRETCHING

EXERCISES

Groin/Adductor Stretch

Groin Stretch A



Groin Stretch B



Groin Stretch A

1. Sit upright with your back straight.
2. With your knees out and the bottom of your feet together pull your feet closer into your body.
3. The closer the feet get to the body the more intense the stretch.
4. For a more intense stretch push gently down on your knees with your elbows.
5. Once the desired stretch intensity is reached hold for prescribed time.
6. You will feel this stretch in both adductor (groin) muscles.

Groin Stretch B

1. Standing straight up or with your knees bent, step to your right or left depending on which leg you want to stretch. You will always stretch the trail leg.
2. Keep both feet pointed forward.
3. Keep your back straight up, don't slouch or bend forward.
4. Step out as far as needed and lower yourself down as far as needed till you feel the stretch in the trail leg.
5. Once the desired stretch intensity is reached hold for prescribed time.
6. You will feel this stretch in only the trail leg.

You should feel these stretches in the groin muscles.

Lower Back



1. Tuck your knees underneath you about shoulder width apart.
2. Tuck your head down.
3. Sit your butt back over your feet.
4. Reach forward with your arms and hands straight out in front as far as you can.
5. Once the desired stretch intensity is reached hold for prescribed time.

Piriformis



1. Lay on your back
2. Cross the leg you want to stretch over the other leg.
3. Grab behind the other leg and pull towards your face.
4. The farther you pull the more you'll feel it.
5. Once the desired stretch intensity is reached hold for prescribed time.

You should feel this stretch in the Piriformis. (On the side of your leg in the hip area)

Pectoralis/Chest

Chest Stretch A



Chest Stretch B



Chest Stretch A

1. Stand upright with your back straight.
2. Holding a straight object with your two arms lift them up and behind the back until you feel a stretch in your chest.
3. Once the desired stretch is felt hold for targeted time.

Chest Stretch B

1. Place your hand and forearm on a wall so that it comes straight out to the side of the shoulder. If no stretch is felt at that point you can step forward as far as needed till a stretch is felt.
2. Once the desired stretch is felt hold for targeted time.

Quadriceps/Thigh

Quadriceps/Thigh Stretch A



Quadriceps/Thigh Stretch A

1. Lay on your stomach
2. Grab the foot of the leg you want stretched.
3. Pull the leg towards your head. The farther you pull the more intense the stretch.
7. A common mistake people make when doing this stretch is arching the back. Do not round your back in order to try to get a more intense stretch.
8. Once the desired stretch intensity is reached hold for prescribed time.

Quadriceps/Thigh Stretch B



Quadriceps/Thigh Stretch B

1. While standing grab the leg to be stretched by the foot.
2. Pull up towards the head. The farther you pull the more you will feel the stretch.
3. A common mistake people make when doing this stretch is arching the back. Do not round your back in order to try to get a more intense stretch.
4. Once the desired stretch intensity is reached hold for prescribed time.

You should feel it in the thigh/hip flexor area.

Shoulder



1. This can be done standing or sitting.
2. Place one arm across the chest and the other hand over the elbow of the arm across the chest.
3. Pull towards the body with the non stretching arm.
4. The harder you pull the more intense the stretch.
5. Once the desired stretch intensity is reached hold for prescribed time.

You should feel it in the shoulder area.

Triceps



1. This stretch can be done standing or sitting.
2. Place the hand of the arm to be stretched behind the back. Put your hand at about the spine
3. With the opposite hand pull on elbow of the arm that is to be stretched.
4. Pull towards your head.
5. Once the desired stretch intensity is reached hold for prescribed time.

You should feel the stretch in your triceps.

Gastrocnemius/Calf



1. Usually this stretch is best done with a firm object to lean on like a wall or tree.
2. Place the foot to be stretched behind the body, flat on the ground. Do not lift your heel off the ground.
3. A greater stretch is felt when you create a smaller angle between the lower leg and foot. To do this step forward with the front foot and slide the entire body forward while keeping the back foot in place with the heel on the ground.

You should feel this stretching in your upper calf.

Hip Flexor

Hip Flexor Stretch A



Hip Flexor Stretch A

1. Place one foot behind the body. This is the leg to be stretched.
2. In this stretch it's ok to take the back heel off the ground.
3. It's important to keep the upper body straight up and down. Do not lean forward as this will decrease the intensity of the stretch.
4. To perform the stretch step forward with the front foot as seen in the picture. Slide your hips forward while keeping the back leg's foot on the ground. Step forward and slide your hips forward as far as you need until the stretch is felt in the hip flexor area of the trailing leg.
5. Once the stretch is felt to the desired level hold that spot for the allotted time.
6. Keep the back leg on the ground.

Hip Flexor Stretch B



Hip Flexor Stretch B

1. Place the knee of the leg to be stretched on the ground as seen in the image.
2. Grab the foot of the leg to be stretched with the arm on the same side of the body.
3. Keep your upper body upright. Do not lean forward.
7. When you are in position slide your hips forward until you feel the stretch in your hip flexor.
8. Once the stretch is felt to the desired level hold that spot for the allotted time.

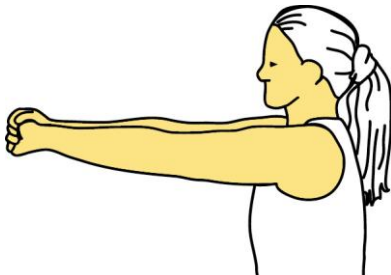
Hamstring



1. This is a stretch I really love. It isolates the hamstring while keeping the back straight.
2. Assume the position in the image by lifting toe and putting your hands on your knee of the leg to be stretched.
3. Lower your upper body, keeping your back straight, keeping your leg straight, until you feel the stretch in the hamstring.
4. Do not round the back.
5. Once the stretch is felt to the desired level hold that spot for the allotted time.

You should feel this stretch in the hamstring

Forearm



1. Both arms should be extended in front of the body.
2. Face the palm of the arm being stretched away from the body.
3. Grab the hand of the arm being stretched and pull towards you while keeping the complete arm straight and the palm facing away of the arm being stretched.
4. Once the stretch is felt to the desired level hold that spot for the allotted time.

You should feel this in the forearm.

Soleus



1. The soleus is the lower part of the calf muscle.
2. Typical stretching routines isolate the gastrocnemius while forgetting the soleus.
3. Using the pose to the left we are stretching the soleus of the leg that is underneath the body not the leg out front.
4. To perform this stretch slide the knee forward (of the leg being stretched) and lower the hips while keeping the heel on the ground (of the leg being stretched) until you feel the desired stretch in the lower half of the calf muscle.
5. Once the stretch is felt to the desired level hold that spot for the allotted time.

You should feel this stretch in the lower part of the calf muscle.

Glute Maximus

Glute Maximus Stretch A



Glute Maximus Stretch A

1. Lay on your back.
2. Bring one leg up, grab it with both hands and pull towards your face until the desired stretch intensity is reached.
3. The non stretching leg can be either extended as seen in the image or bent.
4. Once the stretch is felt to the desired level hold that spot for the allotted time.

ADDITIONAL STRETCHING RESOURCES

[Stretching World](#)

An excellent resource to learn all about stretching is www.stretchingworld.com . At that website you will learn about:

- Static stretching
- Dynamic Stretching
- Foam rolling
- Active isolated stretching
- Stretching by muscle: like the glutes, groin and hips
- Stretching by sport: like soccer.
- Other important stretching information like injury prevention, increased performance, and the anatomy and physiology of stretching.

Everything there is free.

[Elite Soccer Conditioning Flexibility Section](#)

Here you will learn more about foam rolling, static stretching, and dynamic stretching. In fact, one of the most highly rated pages on the internet for the phrase “static stretching” is the article about “[Dynamic Stretching vs. Static Stretching](#)”. The foam rolling (Self Myo fascial Release) section has pictures to guide your exercise selections.

Everything is free at Elite Soccer Conditioning. Check it out.

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