Gone Fishing
Overuse injuries in fly fishing

By Tamara Mitchell

Fly fishing can be a leisure activity associated with a peaceful connection with nature. It might be unbelievable that such a relaxing activity can be associated with pain in the shoulder, elbow, wrist, and hand. In fact, fly fishing is a sport and is quite capable of producing overuse injuries. In this article, we will review research and cover how to prevent overuse injuries while fishing. If you are looking for excellent books on fly fishing and injury prevention, we suggest some in the Resources Section at the end of the article. There is also a Video Section at the end of the article with links and information on each of the videos referenced in the article.

Traumatic Injuries
As with all sports, there is a potential for injuries that occur suddenly and that can have devastating results. A fish hook in the eye, finger, or lip, fish bites, infections from any of these, and slipping on rocks are all ways that traumatic injuries can happen during fly fishing. Nature presents lots of variables, you are flinging around a barbed hook, and you make fish pretty angry when you hook them, so there are many opportunities for mishaps. Although we certainly want you to be aware of these problems and to take proper care to prevent and treat this type of injury, but this article is devoted to the discussion of long-term injuries caused by repetitive strain.

Overuse Injuries
A large number of anglers start out watching somebody else fish, get hold of a rod at some point, and start casting as best as they can. Maybe a friend or parent gives them a few pointers, but mostly they just cast the way they have always done it, refined it a bit over the years, or modified when something started to hurt. Until fairly recently, this is not a sport that has had a lot of research unlike many other professional sports.

Fly fishing involves “throwing” in both a back and a forward direction, which is more involved than any other sport of throwing since most sports involve only a forward motion. Throwing in two directions puts strain on the body in ways that no other sport does and unfortunately many people who fish do not prepare their body and the result is strain injuries that are frustrating and limiting.

A team of researchers studied the biomechanics of fly-casting at Montana State University, Bozeman (MSU). Questionnaire studies and empirical fly-fishing labs at the University’s Fly Casting Institute revealed the types of problems that developed in people who fly fish frequently. It has been acknowledged that fly-fishing in Montana will likely result in different injuries than fishing with huge rods for bigger fish in Florida.

In a survey of 292 fly-fishing instructors by the researchers at MSU, 50% reported shoulder pain, 39% reported elbow pain and 36% reported wrist pain. 74% reported pain in at least one of these locations (i.e., shoulder, elbow or wrist); although only 25% reported that the pain was moderate to severe. 27% reported that they had changed their casting style because of pain.
Many factors lead to overuse injuries in fly fishing. Some factors have to do with technique and some involve the equipment used. These include:

- Grip style
- Casting method
- Stance
- Hauling
- Shooting heads and sinking weights
- Rod weight and length
- Rod and reel balance

The Fly Casting Institute found that people modify their casting strokes as a result of pain or injury, often to a rather extreme extent and to the detriment of casting accuracy and distance capability.4

**Grip style**

Fly-casting grip styles include thumb-on-top, V-style, and finger-on-top. The different styles vary the placement of the thumb and index finger that creates different hand rotation and positioning during the cast. Each grip is good for different types of fishing situations. This YouTube video explains and demonstrates the motion for each type of grip, an explanation of when each grip is most appropriate, and the downfalls of each grip style. [https://youtu.be/dOOX0u2H0l4](https://youtu.be/dOOX0u2H0l4)

Some instructors feel that one type of grip is the only one to use or that you should pick one and abandon all other grips. We do not agree with this, not only because the data shows that variety reduces overuse injuries, but also because you will be a better fisher if you become proficient and know how to use each type of cast in the various situations that present themselves. We do agree that you should find a comfortable way to hold the rod for each type of grip and to be consistent because there is muscle memory that is learned as you are practicing casting. If you move your hand around on the grip, you will have a hard time getting a consistently good cast and learning what the sweet spot is with that grip style.7

Make sure you use proper form, keep your wrist straight in almost all situations, and avoid snapping the wrist, except in the v-cast where it is part of the technique and used only in rare instances. Two variations on the v-grip are shown and the one that feels most comfortable should be adopted.8 The finger on top is used in very light, delicate casts and in tenkara pole casting.9,10
Researchers found that of 292 fly fishing instructors, 85% use the thumb-on-top grip style. In the survey of the fly fishing instructors, those reporting use of the V-style grip indicated significantly less shoulder pain (i.e., less than 3 on an 8-point Likert scale where 0 = no pain and 7 = worst pain). 13% of the finger-on-top, 19% of the 3-point (similar to finger-on-top), and 7% of the thumb-on-top users reported shoulder pain with a severity of 4 or greater. The finger-on-top grip is intended for use with short, lightweight rods or in tenkara fishing with a very short rod, no inertia from a reel or rings, and a crisp, soft, delicate style of cast.

DeQuervain’s tendonitis is one type of injury resulting from fly fishing. The thumb on top grip is the one that causes the most strain on this tendon. It may also have to do with the balance of the rod and reel as well as where you place your hand on the grip. We cover rod and reel balance in the section on rod length and weight.

Whenever grip you use, it must feel comfortable for you. That doesn’t mean that the first time you try a different grip, it won’t feel awkward. Every new technique requires practice to feel natural. What we mean is that the grip and cast needs to feel like it is strain-free. Your hand, wrist, and arm need to be in a relaxed and neutral position.

Gripping the rod or line too tightly will cause muscle tension, fatigue, pain, nerve compression in the hands, and loss of sensitivity. In addition, it puts too much energy into the cast, causing the rod to vibrate and to send waves down the fly line. Intensifying the grip just as the rod is stopped and relaxing the grip the rest of the time allows the caster to feel the cast and the straightening of the line in the air. This technique also allows the caster to feel when to start the forward cast and to smoothly control the line.

Casting methods
In fly casting, there are 2 motions for each cast. The back cast motion moves the line from the front to behind the caster. The forward cast motion moves the line from behind the caster forward.
In all casting methods, keep your elbow close to your body and shoulder blades stable.\textsuperscript{13,4} Watch this video for a better understanding of how this can save your shoulder: \url{https://youtu.be/csVar4EoGPU}.

Some instructors encourage a sharp snapping motion at the ends of the cast, both backward and forward, but can be harmful to the wrist, elbow, and shoulder muscles and ligaments often leading to tears, scar tissue, torn rotator cuff, and chronic pain.\textsuperscript{13,9,3} In fact, tension in your grip and rigidity in the arm from an abrupt stop will cause the rod to recoil and oscillate.\textsuperscript{15} By fluidly bringing the rod to a stop with a loosened grip and allowing the rod to drift slightly as the loop in the line unfurls, then tightening the grip slightly as you change the stroke direction, recoil and shock waves in the line will be reduced.\textsuperscript{15} Practicing this relaxed method of casting will reduce a lot of fatigue in the shoulder, arm, elbow, wrist, and hand.

There are several casting methods that can be used: overhead, sidearm, elliptical, or a combination of these.\textsuperscript{5}

**Overhead casting** has both a back and forward cast near vertical. It begins with the rod tip touching the water and the line straight.\textsuperscript{16,17} In the back cast, the rod is brought back until the line straightens behind the caster at a point that is just about vertical or a little behind the head.\textsuperscript{16,17} This involves primarily the forearm with a straight wrist. The elbow should be kept close to the body, not wildly flailing in the air.\textsuperscript{17}

In the forward cast, the rod is tapped forward, flicking the
line out over the water. The hand stops at the 10 o’clock position. Again, the wrist should not break or the line will slap hard into the water, scare the fish, and it will increase strain on the wrist and hand.

Although many casting websites and authorities maintain that the rod acts as a spring with the bending and unbending of the rod in conjunction with an abrupt stop to the rod in the back stroke and the forward stroke, that is not borne out in research. First, the “stop” is not a single event in the casting stroke. There is a slowdown at the end of both the back stroke and the forward stroke. The primary generator of line speed is the caster moving the rod, not the spring action of the rod and good casters adapt their cast to generate the line speed needed for the cast with different rods. Rod spring accounts for probably less than 20% of the overall speed of the line.

Sidearm casting is often done to cast underneath overhanging bushes or when windy conditions would collapse an overhead cast. The forward and the back cast are at a 45° angle or even a horizontal plane parallel with the water.

Elliptical casting is a combination of overhead and sidearm styles with a back cast at a 45° to horizontal angle and a forward cast at a near 90° angle. This is often also called oval or Belgian casting.

It appears that, as with so many things, it helps to vary the motions you use to prevent repetitive strain and overuse injuries or problems. In the charts below, statistically significant differences are denoted with an asterisk. In general, use of multiple casting techniques resulted in the lowest reported pain in the shoulder, elbow, and wrist. Overhead casting results in the least problems of any single type of cast.
Vary casting styles and favor the overhead style which is associated with less overall pain than the elliptical or sidearm styles. Excessive wrist use will result in injury. The wrists can be used to fine-tune a motion, but they are not capable of making good casts on their own. Move the casting workload from the wrist to the more powerful shoulder muscles and mechanisms and it will help prevent wrist problems. Strengthening the shoulder through exercises, discussed later in this article, will help prevent development of shoulder problems and employing more of the stance and body kinetics in the cast utilizes the strength and energy of the whole body.

Inexperienced casters should cast shorter distances until casting style is mastered to avoid injury to the shoulder, elbow, and wrist.

Slow down your casting and improve your accuracy. There is no need to cast frantically over and over. By slowing down, you reduce the number of repetitions and you reduce your body tension. Use a more relaxed approach and you will save strain on your body. Watch this video to see the difference: https://youtu.be/6ozNiNprYGY.

In empirical studies analyzing arm movement during casting, researchers found that the relative time delay between peak shoulder and elbow velocities during the cast increased significantly as line length increased. Specific increases are made in the motion of the shoulder, elbow and wrist to accommodate the demands of casting greater lengths of line.

- During the forward cast portion of an overhead cast the order of peak motion averaged shoulder at 80.5%, elbow at 86.3%, and wrist at 89.1% of the total casting time which would agree with a normal forward motion kinetic chain. Energy builds as the motion moves down the kinetic chain.
- Overall, the total range of motion of the shoulder and elbow increased with the length of the line cast. Wrist motion was not affected by the length of the line cast.
- Those who fished 10 days a year or less showed a significantly higher wrist velocity than shoulder or elbow velocities, while more experienced fishers exhibited a much higher shoulder velocity.
**Stance**
The research to date has not addressed injuries as they relate to stance; however, there are principles which are normally accepted in ergonomics and are taught in good fly casting schools.\(^{9,13}\) Using your hands and arms between waist and shoulder height, and using the powerful upper arm muscles to cast, provides the most efficient acceleration and stopping power.

In all cases, the feet should be slightly apart for a comfortable, well-balanced, relaxed and stable stance allowing the caster to transfer body weight between the feet during the cast.\(^{13}\) Proper posture with head upright and balanced over the shoulders, shoulders back and down, not scrunched, and the overall posture should be upright, not slouched. As we have mentioned before, keep shoulder blades stable.\(^4\)

In an open stance, the left foot is forward when casting over the right shoulder or vice versa for left-handed casting. The shoulder must not turn during the forward casting stroke because that will cause the rod tip to make a curved path.\(^{9,13}\) This stance is used in distance casting. It allows the angler to turn his/her head to watch the back cast without moving or turning the shoulders.\(^9\)

The feet should be far enough apart so the body is balanced and the angler can transfer body weight between the feet during the cast. The open stance is used mainly in distance casts and it allows the angler to turn the head to watch the back cast without moving or turning the shoulder.\(^9\) If the cast is made using the right hand over the left shoulder, or backhanded, the left shoulder and left foot should be forward.\(^{13}\)

**Hauling**
Hauling is a method of loading the rod to increase the line speed and casting distance. This is achieved by pulling the fly line with the non-casting hand in the middle of the fly-casting stroke. In the single haul, the non-casting hand pulls down on the line while the rod is being lifted during the back cast. In the double haul, the non-casting hand pulls down on the line both during the back cast and during the forward cast.\(^5,25\)

The survey of fly casting instructors by the Fly Casting Institute found that those who used a haul in casting reported significantly more pain. 74% using either or both the single or double haul techniques reported some shoulder, elbow, or wrist pain after fly casting, whereas only 33% of those who used neither hauling technique reported pain.\(^5\) Hauling probably increases the torque on the arm.\(^5\) Casting distance alone did not result in significantly more pain, even for those who routinely cast over 75 feet, but hauling did result in increased reported pain.\(^5\) Since single and double haul techniques are so commonly practiced in distance casting, we suggest caution, varying the cast, and taking frequent breaks to reduce the possibility for injury.

Illustrations courtesy of References 9 and 13
**Shooting heads and sinking weight**

Weight is often added to the fly line by adding pieces of weight to the end of the fly line or by using a fly tied with extra weight (sinking fly). Another option is to use a weighted shooting head which is a short length of heavier fly line designed with a weighted core that is used at the end of the fly line. Any of these methods adds weight and produces more distance to the cast, but it also increases the mechanical stress to the arm during the fly cast.

Almost 62% of those surveyed routinely use shooting heads while casting. 79% of this group reported shoulder, elbow, or wrist pain after casting. 66% of those who do not use sinking heads reported pain in these areas, a statistically significant difference.

79% of those surveyed used sinking weights. 78% of this group reported shoulder, elbow, or wrist pain after casting compared with 60% of those who do not use a sinking weight, again a statistically significant difference.

**Rod weight and length, rod and reel balance**

Most anglers know that the rod length and weight is supposed to be decided based on the type of fish you are going to catch. A lighter rod should be used to catch smaller fish, but an increasingly heavier rod is required to pull in larger fish. In addition, the type of fly or bait used changes based on the type of fish, where trout bite at very small, lightweight insects up to large fish which bite at meatier delicacies that add to the casting weight and dynamics. This video is a great tutorial on what factors to consider in a rod for beginners: [https://youtu.be/ap6w3mEBJg8](https://youtu.be/ap6w3mEBJg8) It is best to choose the lightest rod necessary for your type of fishing and choose a reel that will keep that rod balanced at exactly the point where you grip the handle. This video explains rod and reel balance: [https://youtu.be/WJ_T3OS45q4](https://youtu.be/WJ_T3OS45q4)

One thing that adds unnecessary strain to your hand, wrist, and forearm is when the rod and reel are not balanced. If the reel is too heavy, you will feel tension in the area of the wrist on the thumb side as shown in the illustration in the previous section on grip style for DeQuervain’s tendonitis.

If you feel tension on the other side of your hand from the little finger down into the wrist and bottom of the forearm, you may be compensating for a reel that is too heavy. Shifting the hand a bit forward or backward on the grip may help balance the rod better, but this should be comfortable for you. Most likely this pain is due to muscle fatigue from attempting to compensate for an unbalanced rod and reel.

To compensate for an unbalanced rod and reel, it is possible to make this very inexpensive, but effective change to your rod: [https://youtu.be/MdRNJsS1Ecw](https://youtu.be/MdRNJsS1Ecw) If things are hopelessly out of balance, it will be necessary to change to a lighter or heavier reel to bring your casting setup into balance.

In the survey of fly-casting instructors, fly rod weight and length was associated with pain ratings. Rod weight ranged from 2 to 15 pounds with a median of 5. Rod weight was significantly correlated with the amount of wrist pain (i.e., lighter rods were associated with less wrist pain).

Rod length varied from 4 to 15 feet with a median and mode of 9 feet. Each additional foot of length increased the odds of reporting some pain in the shoulder, elbow, or wrist by 46%. No significant associations were found between rod action and the pain measures.
Two-handed fishing methods are becoming much more common which allow for longer rods, use of shooting heads, sinking weights, and casting long distances with much greater ease and less likelihood for injuring one arm. Two-handed fishing was traditionally used when fishing for larger, heavier fish, but it is now sometimes even used in trout fishing to gain more distance from a cast and control the speed of the fly better.

Those who fish for heavy saltwater fish have a higher prevalence of severe pain after casting. Fishing for large fish requires the most strength and power. Fly casting for tarpon involves periodic long casts with heavy flies and heavy equipment.

31% of those who fish for heavy saltwater fish reported moderate-to-severe shoulder, elbow, or wrist pain after casting as compared to 19% of those who have not fished for heavy saltwater fish, a significant difference. This significant difference persisted in statistical control for casting style and pain caused by other activities.

We recommend researching two-handed rods and techniques if you plan to fish for heavier fish and it might be something to consider if you have issues with your shoulder in single-handed fly casting for smaller fish.

**Preventing overuse injuries**

Make sure your body is in shape for this physically demanding sport. By strengthening the muscles used for casting, you will cast better, be able to cast longer without tiring, and you will help avoid overuse injuries. And doing a few warmup exercises before you start casting can reduce injuries as well.

If there is already pain, please consult with a health practitioner before doing any strengthening or stretching techniques. Further fatiguing an injury or overused body part will make the problem worse rather than improving things. Consulting a physical therapist is likely the best solution when pain is present, and consulting with a fishing pro on your technique would be advisable, too.

- **Maintain overall fitness levels**

  Maintain good overall fitness through a regular exercise program. A combination of aerobic fitness, strength training, and improving flexibility can be of benefit in preventing injury, helping those with back pain or posture issues, reducing soreness, and also improving distance casting. By being fit when you go out to fish, your overall endurance will be a lot greater. We have a lot more information about improving fitness in our article, Fit & Fabulous: [http://working-well.org/articles/pdf/Fit.pdf](http://working-well.org/articles/pdf/Fit.pdf)

- **Rotator Cuff Exercises**

  Strengthening the muscles in the shoulder, specifically the rotator cuff, is a good way to help prevent shoulder injuries. These exercises should be done in preparation to fish, not after pain has developed. These exercises should not cause you pain! If they do, stop immediately and try again after a couple of weeks with a lighter weight.

  Start your strengthening program with very light weights. You should be able to do 20-30 repetitions of each movement. If this is not possible, lower the weight.
Lift your arm to a slow count of 3, then lower your arm to a slow count of 6.\textsuperscript{28}


<table>
<thead>
<tr>
<th>Lift your arm to a slow count of 3, then lower your arm to a slow count of 6.</th>
<th>Lie on your stomach on a table or a bed. Put your left arm out at shoulder level with your elbow bent to 90° and your hand down. Keep your elbow bent, and slowly raise your left hand. Stop when your hand is level with your shoulder. Lower the hand slowly. Repeat the exercise until your arm is tired. Then do the exercise with your right arm.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Illustration" /></td>
<td><img src="image2.png" alt="Illustration" /></td>
</tr>
<tr>
<td>Lie on your right side with a rolled-up towel under your right armpit. Stretch your right arm above your head. Keep your left arm at your side with your elbow bent to 90° and the forearm resting against your chest, palm down. Roll your left shoulder out, raising the left forearm until its level with your shoulder. (Hint: This is like the backhand swing in tennis.) Lower the arm slowly. Repeat the exercise until your arm is tired. Then do the exercise with your right arm.</td>
<td>Lie on your right side. Keep your left arm along the upper side of your body. Bend your right elbow to 90°. Keep the right forearm resting on the table. Now roll your right shoulder in, raising your right forearm up to your chest. Lower the forearm slowly. Repeat the exercise until your arm is tired. Then do the exercise with your left arm.</td>
</tr>
<tr>
<td><img src="image3.png" alt="Illustration" /></td>
<td><img src="image4.png" alt="Illustration" /></td>
</tr>
<tr>
<td>In a standing position, start with your right arm halfway between the front and side of your body, thumb down. (You may need to raise your left arm for balance.) Raise your right arm until almost level (about a 45° angle). Don't lift beyond the point of pain. Slowly lower your arm. Repeat the exercise until your arm is tired. Then do the exercise with your left arm.</td>
<td></td>
</tr>
</tbody>
</table>

- Wrist and hand stretching and strengthening

Doing some stretches and strengthening exercises can help prevent overuse injuries of the wrists.\textsuperscript{11} Extend the arm with elbows straight, then curl the hands up and down.\textsuperscript{11} This is especially effective if done while holding a ball or soup can in the hand.\textsuperscript{11}

Additionally, extending the fingers against the resistance of rubber bands can help, or use a device like the Cat’s Paw (catspaw.com).
We have some good illustrated stretches for the wrists and hands on our website as well as links to YouTube videos that will teach you some good techniques (http://working-well.org/Website/st_arms.html).

Pre-fishing warmup
Warming up the body prior to fishing is important just as with any sport. Just by walking from your car to the fishing location, you have a good head start on getting your body warmed up and your heart pumping a bit. Then, by doing gradual, slow motions similar to those made during fishing, your muscles, tendons, and other body tissues get loosened up, lubricated and the blood circulating to them. This will help prevent injury and get your body loosened up and ready for casting. Warm up your muscles prior to fishing by bending at the waist, letting your arms hang down completely relaxed, and slowly swinging your arms left and right in a pendulum motion.28

This video has a nice warmup that you can learn at home and use when you get out to your favorite fishing spot. It warms up the core and the shoulders. https://youtu.be/s2jWQ99RWOQ

Please note that we do NOT recommend doing stretches prior to any type of exercise! This is a very outdated notion and can actually result in tears to body tissues, especially in a cold environment. Warming up involves getting the heart pumping a bit and moving the body, it does not involve stretching at all.

Other injury prevention tips
Fitness and hydration. Fishing can be hard physical work and often involves extreme weather conditions.2 Maintain a healthy lifestyle with adequate rest, regular exercise to maintain fitness, and plenty of fluids to stay hydrated.3

Breaks. Take breaks to rest your arm and hand.12

Neutral posture. Use neutral postures; keep your back straight and conduct your tasks as close to your body as possible.2 Please review our article on posture to gain a better understanding of posture, why good posture is important, and how to correct and maintain yours: http://working-well.org/articles/pdf/Posture_Balance.pdf

Feet. If your waders don’t fit quite right or provide enough support, consider adding insoles. There are many types of insoles available that can add insulation, warmth, arch and heel support, or a combination of these. Visit TheInsoleStore.com for a large selection. https://www.theinsolestore.com/insoles-by-activity/winter-skiing-skating-hockey-insoles/winter-boot-insoles.html?limit=all

Cold. Fly fishing is often done in cold weather and in cold water. There are many risks involved with exposure to cold: hypothermia, frostbite, chilblain and trench foot. Wearing layers and a warm cap is advisable, and make sure shoes or boots are not too tight which prevents blood circulation.29 Bring a change of clothing and socks. Avoid cotton clothing that holds water and perspiration in cold weather.29 Overuse injuries are also increased when the body is cold because circulation, especially to the extremities, is reduced. Staying warm should be a priority and if it is not possible, cut the adventure short and get yourself to a comfortable, warm, dry place. Fishing should be enjoyable, not an endurance challenge or a threat to health!

Relax your mind. Fishing should be as much about relaxing your mind as it is about perfecting your cast or catching fish. Maybe it is even more about relaxing your mind and the rest is just a reason to get out
and enjoy nature. Try not to make fly fishing a competitive or frustrating experience. Watch this video and get in touch: [https://youtu.be/XDobfNT1jRg](https://youtu.be/XDobfNT1jRg)

**Injury Treatment**

If you are experiencing frequent or chronic pain or discomfort following fishing, you should seek professional advice from a health practitioner. As with any sport, you should never continue to fish if you experience pain. Fly-casting symptoms should not be treated as typical overhead throwing injuries such as those seen in pitchers and tennis players. Because the fly-casting stroke involves both a back and forward cast, it affects the front and back of the shoulder. In theory, there is equal torque and force with both the back cast and the forward cast, leading to symptoms on both planes of the shoulder, elbow, and wrist.

Please read our article on Repetitive Strain Injuries: Muscle and Tendon Disorders: [http://working-well.org/articles/pdf/RSI_muscles.pdf](http://working-well.org/articles/pdf/RSI_muscles.pdf). This article covers the usual problems associated with the shoulder, elbow, wrist and hand including self-care and treatment for more advanced cases.

**Final words**

Please think about what the fish is experiencing and practice humane safety rules that will reduce stress, illness, and death of the fish. This article is excellent. Please read it: [http://www.ginkandgasoline.com/fly-fishing-tips-technique/14-ways-to-prevent-fish-mortality/](http://www.ginkandgasoline.com/fly-fishing-tips-technique/14-ways-to-prevent-fish-mortality/)

---

This article and all of our articles are intended for your information and education. We are not experts in the diagnosis and treatment of specific medical or mental problems. When dealing with a severe problem, please consult your healthcare or mental health professional and research the alternatives available for your particular diagnosis prior to embarking on a treatment plan. You are ultimately responsible for your health and treatment!

**VIDEOS:**

- *BEST Beginner Fly Fishing Rod Outfit.* Twig ‘N’ Timber Outdoors Channel, YouTube.com. Feb. 27, 2016. [https://youtu.be/ap6w3mEBJg8](https://youtu.be/ap6w3mEBJg8)
RESOURCES:

*Fit to Fish: How to Tackle Angling Injuries.* By Hisey, S.L and Berend, K.R., May 2, 2005. Frank Amato Publications.


REFERENCES:


10. *Discovering Tenkara.* By Pearson, J., Gaskell, P., and Hodson, D. “Eat Sleep Fish”, Issue 9, Article 3. [http://eat-sleep-fish.co.uk/content/2012/09/discovering-tenkara](http://eat-sleep-fish.co.uk/content/2012/09/discovering-tenkara)


20. *The Sidearm Fly Cast.* Adventure Fly Fishing. [https://www.youtube.com/watch?v=SuQw61akJWs](https://www.youtube.com/watch?v=SuQw61akJWs)


