

Practical Application - The Delivery - Part I

Are you rotationally challenged? Is your release in need of an overhaul? Do you suffer from release-deficit disorder? Well if so, this and next month is for you. The delivery of the bowling ball. A most frequently discussed item in today's high-tech bowling world. What I hear most often from eager-to-advance bowlers is, *"I need to learn more releases"* or *"I need to work on my release."* So, we decided to investigate the physiological nature of the release and how some good sound bowling-specific training can enhance your release capabilities.

Last month we delved into a training philosophy for the bowler-athlete. For those of you fairly new readers, I have coined and often use the term "bowler-athlete" when describing you. To quickly recap, a training philosophy, differing from a training principle, is the driving force behind your actions. Training principles are the specifics of training, while training philosophies are the reasons and answers to the question why. The training philosophy is partially your motivation, as well as your path, your guideline, your framework, and your map to a new and improved bowler-athlete... a more functionally efficient bowler-athlete. The training philosophy is a fundamental belief in the need for, the practice of, and the benefits from training. It is your athletic mission statement. Bowlers too need a personal training philosophy. Not a way to practice on the lanes, although that could be incorporated into the larger scheme of things, but a philosophy reasoning the need and justifying the act of bowling-specific training.

This month, let us use our training philosophy and begin to apply some basic sport training techniques. At the same time, let's look at just how it impacts your bowling. I love practical application, that's the thing most often overlooked when considering sport medicine and bowling. The response I usually get from people goes something like this: *"Ha ha ha ha ha ha. Sport medicine for bowling. Don't you just throw the ball at 10 pins and add up the score?"* Unfortunately, our society has a very limited view of our sport and therefore cannot comprehend the vast nature of our competitive environment, let alone what it takes to train and be successful on an elite or professional level, not to mention those of us who are dedicated to training just to get to those levels. So, this is not only for those of you who are interested in sport medicine for bowling, but it is also somewhat geared to those who have a limited knowledge of the demands of our sport.

The Release & The Wrist Joint

The wrist joint. Quite possibly your best friend or your worst enemy. You might not even know it. The wrist joint can make or break the delivery of every ball. It either allows you to use various releases or it prevents you from using them. If your wrist is weak, the release position is compromised. If the wrist is stiff and inflexible, the variability of delivery is hindered. On the other hand, if the wrist is strong and flexible, the release and deliver can be maximized to its fullest potential. Therefore, I believe it is in your best interest to strengthen and increase the flexibility of your wrist joint. Do you want to learn different releases? Well, if your body is not physically capable of handling the stress or performing the task, then you will never learn new releases and be able to use them effectively.

Our scientific research has determined the wrist joint is one of the most stressed joints while bowling. So, Let us look at some diagrams to understand better the wrist joint in relation to the release and the stress placed on it. Using the diagrams provided, you can begin to see how the wrist joint is used, stressed, and mobilized during the release. Diagram 1 reveals the straight wrist position, which has been found to be stressed moderately during the release. The exact amount of stress was at one time determined to be somewhere beyond 1.5 times the normal daily amount of stress. Due to centrifugal force and other biomechanical and ergonomic factors the stress of the release is concentrated on the forearm muscles and the wrist joint, yet simultaneously spread through the entire arm. It's kinda like a shared stress.

Diagram 2 shows the cupped or flexed wrist position, which reveals even more tension is exerted upon the wrist joint. Notice that the cupped wrist position requires the tendons of the wrist to tighten or contract strongly at the insertion point of the wrist joint. That's a lot of stress being placed there. The actual amount of stress was measure to be nearly over three (3) times the amount of normal daily stress placed on the wrist joint. As the wrist is cupped or what I like to call flexed throughout the arm swing, a tremendous amount of tension and stress are placed on the wrist joint and the accompanying forearm muscles.

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Now, if you are not able to sustain a cupped wrist position throughout the arm swing, or you would like to learn to do so, then strengthening the wrist joint and increasing its flexibility should be two of your primary goals. That's the practical application. If you want to do something you can't, then you must train the body to handle the stress and tension you are

asking of it. It's really that simple. So, not to dilly-dally along with physiological this and mechanical that, to strengthen your wrist joint, you must exercise it specifically. Therefore, I suggest some simple wrist curls for starters.

The best and simplest forearm exercise is the wrist curl. Using an underhand grip for the forearm flexors, and an overhand grip for the forearm extensors, I recommend performing 1-2 sets of 8-12 repetitions of wrist curls 1-2 times a week. Diagrams 3 & 4 demonstrate the wrist curling exercise. In order to increase your current wrist strength, you will need to use a resistance that is greater than what you are normally accustomed. What I mean is, you need to push yourself or exert yourself to do more than what you think you can, in order to enhance your current strength levels. If you only do what you feel is comfortable, your strength increases will come super-slowly and possibly not at all. If you are throwing a 16-pound bowling ball, then you should be able to do underhand wrist curls with at least 16-20 pounds of weight. So that's a good starting point.

Obviously there are many many forearm exercises we could recommend. Next month we will offer a couple more as we delve further into the wrist joint and look at cocking the wrist to gain more axis tilt off the hand. At that time we will investigate some additional forearm and wrist exercises as well as more in-depth information on the wrist at the point of release. For now, start doing your wrist curls to strengthen those forearm flexors and extensors.