

Treating orthopedic injuries with biologics

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With the advancement of biomedical engineering in the field of orthopedics, biologics have been introduced as a treatment utilized to repair one's injury as well as strengthen one's biomechanics. One is able to strengthen one's body in manipulation of the human body healing system. Many patients lose hope when hearing that surgery is their last option and these may be patients that are suffering agonizing, continuous pain from recurrent injuries. In utilizing the body's own healing system, having low risks, and developing rapidly with current biomedical engineering, biologics can be considered a treatment option far more effective than surgery. According to Stone, biologics are drugs, vaccines, or antitoxins that are synthesized from living organisms or their products to be used as treatment. Most common types currently being used currently include PRP, BMA, and stem cells.

PRP, platelet rich plasma, requires a treatment in which a patient's own blood is utilized in repairing the tear. The blood is drawn from the patient and is modified when placed in a centrifuge in order to separate the platelets from the rest of the serum in the blood. This causes for the platelets to concentrate into the liquid portion of the blood, which in turn increases the concentration of the platelets (Kohn). The portion of the blood that is filled with platelets is injected back into the ligament or tendon or joint of the patient that has been giving them pain. Major issues such as arthritic pain and chronic pain of muscles and tendons have been relieved with this PRP injection.

BMA, bone marrow aspirate, requires a treatment similar to the one of PRP but is used for a different purpose. This method has been developed in order to avoid open bone grafting, which can be a very risky surgery. Cells do not

need to be manipulated as much with this as in open bone grafting, reducing the amount of risk associated with treating the condition (American Orthopaedic Foot & Ankle Society). Stem cells from the bone marrow are injected into the tendon and this allows for the stem cells to differentiate into bone cells allowing for bone growth to injuries. As for stem cells, with orthopedic injuries, one is specifically dealing with mesenchymal stem cells, which are cells making up embryonic tissue that end up changing into cells making up connective and skeletal tissue. Stem cells renew themselves through cell division and specific types that deal with orthopedic injuries include cartilage, bone, and fat cells.

Their function is to repair damaged tissue, tendons, or ligaments. Stem cells can be treated as a renewable source of replacement cells and tissues in order to treat diseases. As biologics are newly developed methods in serving as treatment to injuries in the field of orthopedics and sports medicine, there are not many patients who have accepted as a treatment because of the uncertainty of its results. However, there are proven advantages of biologics that do not need to be derived from the experimentation with the patients and the progress of their injury with the treatment. One asset would include the fact that biologics function directly with the human body's healing system (Stone). The body's healing system works in a way in which whenever an injury as occurred blood rushes to the wounded site causing for components of the blood such as platelets and white blood cells to be carried along and allow healing of the injury.

So biologics work in a way so that the components necessary for healing can immediately arrive on site and a quicker response can occur. When <https://assignbuster.com/treating-orthopedic-injuries-with-biologics/>

considering treatment options, one always keeps in mind the amount of risk any treatment could possibly bring and if it is worth the risk. Specifically with surgery, which is often a last resort for many, if it does not turn out successful, the pain will most likely exist afterwards causing more frustration for the patient as well as putting large sums of money into waste. Along with that, there are health issues that could result from an error occurring during the operation with which the patient would have to deal in addition to the original injury or pain. The advantage of biologics is that there is a very minimal amount of risk to it, as it does not involve any artificial substances or any open bone grafting.

Even if it does not produce successful results, one knows that there is a very miniscule probability that more health issues would result. It serves more as a treatment of all or nothing rather than having something to lose besides money since it is not covered by insurance. As technology in the medical field is significantly building and progressing towards tackling commonly occurring maladies, traditional methods of treating injuries are put less and less into practice. With the creation of biologics, many individuals who are prone to experiencing ongoing injuries have a legitimate reason to avoid undergoing surgery, and therefore have a more built motivation on healing. Through research, it has been discovered that in most circumstances the effectiveness of the treatment for a patient depends on their personal motivation and determination to strive against the deep-rooting distress.

So with biologics being a less stressing procedure, active individuals such as athletes are able to optimize their mentality on curing themselves and in turn be able to have a more smooth treatment. Especially since there is <https://assignbuster.com/treating-orthopedic-injuries-with-biologics/>

more stress than motivation involved for surgery, when discovering that there is an alternative to being forced to accept the last resort, one is beyond motivated in discovering this alternative. It is fascinating how medicine has developed so much as to allow for the human being to pay less worry on the conditions of their bodies. More and more traditional practices are being replaced with the new technology-oriented ones and even though the latter cannot effectively treat severe injuries, they do save the amount of time and effort needed to treat the smaller injuries. Biologics have created a revolution in the field of orthopedics in allowing for people like athletes to benefit in healing quickly and being able to continue on their daily lifestyles without having to worry about going through something as risky as surgery which does not reassure one's body to return to its natural form.