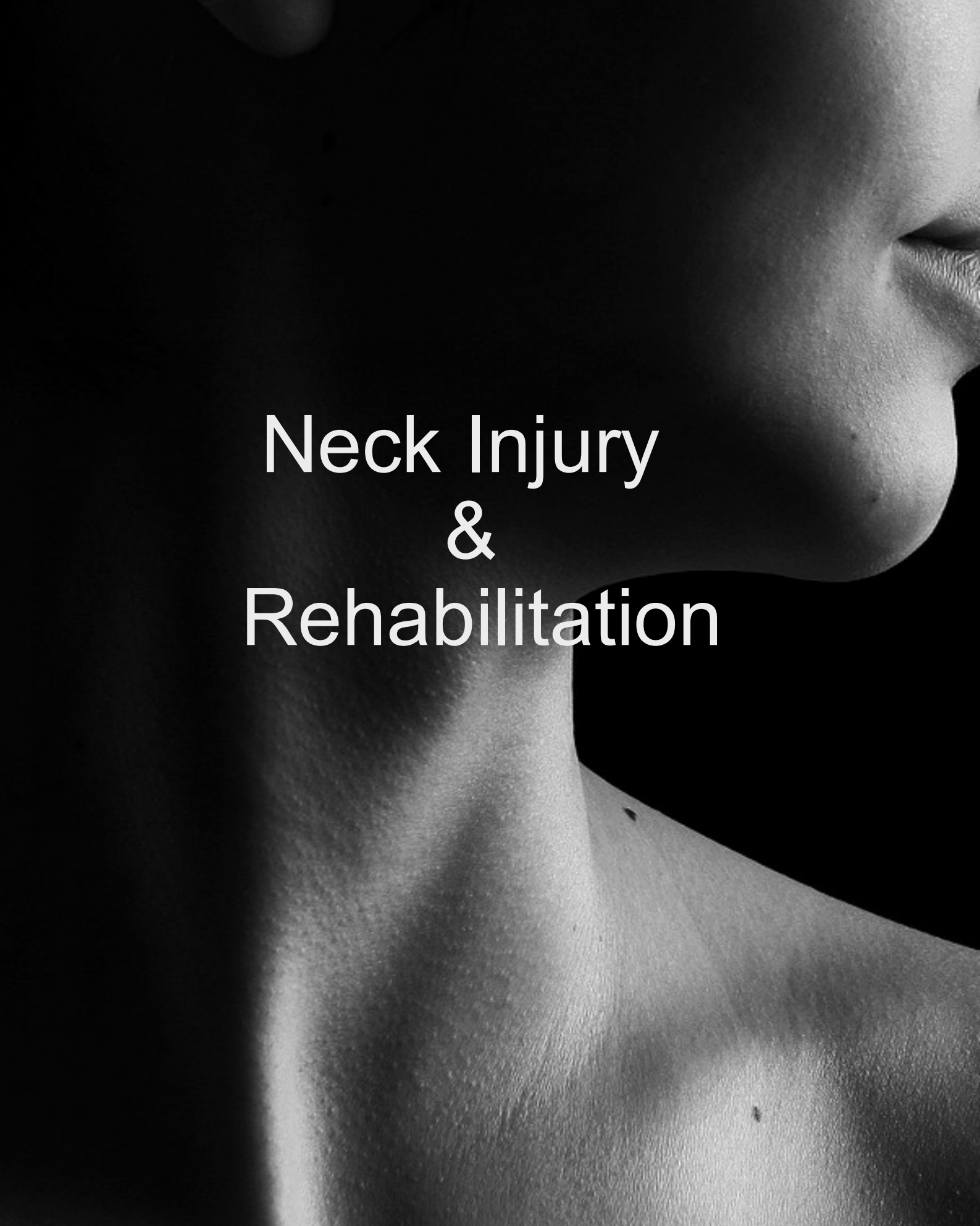

Neck Injury & Rehabilitation

by Dr. Alex Jimenez
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Evaluating Neck Injuries in Athletes

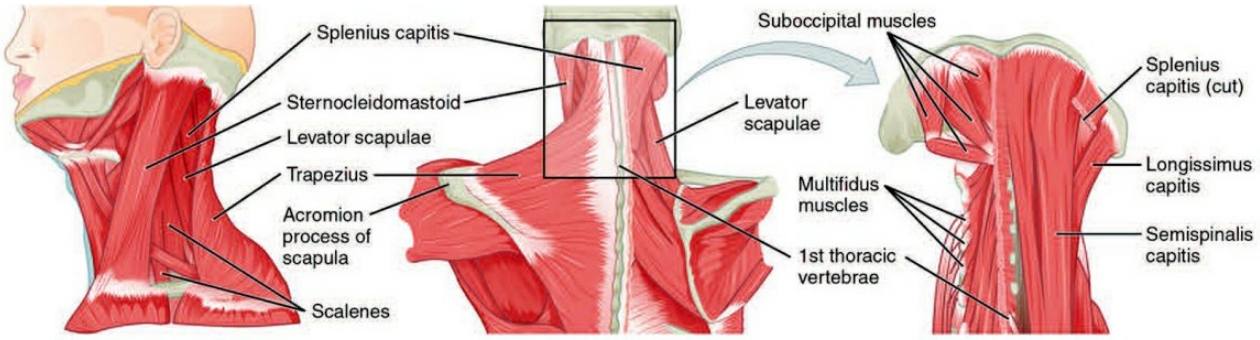
October 11, 2016

> "Approximately 50 percent of the overall population will experience neck pain at some point in their lifetimes, with sports-related injuries accounting for about 10% of all neck injuries and symptoms. The cervical spine is a region which requires more concentrated attention than it usually receives." – Dr. Alex Jimenez, Chiropractor El Paso

The predominance of neck injuries in sports is believed to be rising, mostly due to the increased improvements in injury recording and observation. However, the growth of physical, extreme sports has led to higher risks of injury among unprepared athletes.

For instance, athletes who participate in sports such as skeleton, where individuals sprint on ice and hurtle head first down an icy, often bumpy track at elevated speeds, must learn to understand the importance of properly training their neck to avoid complications to its surrounding structures. Neck injuries are common in skeleton but these can be prevented. Neck training doesn't simply involve avoiding the risk of suffering a neck complication, in competitive sports, such as skeleton, strengthening the neck can ultimately improve an athlete's overall physical performance, helping them achieve their goals of triumph.

In order to decrease the chance of injury, the neck needs to be strategically and individually prepared to ensure it has a greater tolerance to the increased loads it's exposed to. But, before an athlete begins implementing this program, it's essential for them to receive an accurate evaluation of their cervical spine in a comprehensive assessment and screening process.



How Neck Injuries Occur

Neck injuries occur most frequently in motorsports and high impact, collision sports like rugby. It's been previously described that acute force exposure through compression and distraction, axial loading and/or direct blows along with sudden acceleration and deceleration of the structures of the body, are the most common reasons for injury in these types of sports.

Compression, or axial loading, is the primary means of neck injuries in sports and often results when load is applied and the neck's natural lordosis, or curvature, is lost, generally due to an excess flexion which leads to an improper distribution of the energy placed against the body.

With acute exposure, the increased pressure can cause severe damage or injury to the cervical spine while chronic exposure can create an accumulative effect. Collapsed scrums in rugby, falls from heights and unexpectedly, timed maneuvers in combat sports can create situations where neck injuries may occur. Another type of neck injury which can develop from axial forces include brachial plexopathy irritation or injury. These can be either compressive or distractive in nature, most frequently reported among athletes who participate in tackling sports or as a result of a fall from a height where the neck is laterally flexed and the shoulder girdle is decompressed.

Brachial plexopathy injuries occur when a downward traction pressure is applied on the shoulder girdle as the neck is contra-laterally flexed or may occur due to compressive forces being placed against the vertebra of the spine. Symptoms can include temporary, altered sensations and weakness as a result of irritation to the nerve roots found along the cervical region of the spine. Following any compression or distraction injuries, healthcare professionals, including a chiropractor, should suspect the presence of spinal cord injury. This severe complication may need to be cleared by a healthcare professional following a thorough on-field assessment before the athlete is moved.

Whiplash Associated Disorders

Whiplash is a commonly diagnosed type of neck injury, most frequently caused by the sheer force of an automobile accident against the complex structures of the cervical spine, however, it can also commonly occur in sports which also involve sudden acceleration and deceleration of the body or after an athlete has suffered a direct flow to the trunk or head. A combination of neck pain, headaches, temporal mandibular dysfunction and referred pain as well as neurological symptoms may result when applied pressure is transferred to the neck, causing sudden, uncontrolled movements which may lead to damage or injury to the anterior and posterior structure of the cervical spine.

Evaluating Neck Injuries in Athletes

The cervical spine, or neck, isn't only at risk of experiencing acute injuries, chronic exposure to pressure from external and internal forces from maintained static positions, such as in sports like archery, or constant exposure to gravitational or vibration forces can frequently develop neck injuries and symptoms due to overuse. The symptoms of chronic G-force exposure include neck pain as well as dizziness, disorientation, altered vision, reduced co-ordination. These symptoms can ultimately reduce an athlete's performance, impairing their ability to properly participate in their specific sport and may place both athletes and opponents at risk of serious complications, especially when travelling at increased speeds. These symptoms are believed to appear due to a combination of reduced blood flow to the head, visual disturbances and high amounts of load being placed on the musculature of the neck.

G force should be immensely considered in contact sports where collisions between players can expose athletes to forces equivalent to those experienced during a car crash. Long term exposure to G-forces has been determined to leave athletes with an increased risk of developing vertebral disc degeneration complications. Furthermore, exposure should be observed closely.

Evaluating Neck Injuries

Before participating in any type of sport, the basic range of mobility and strength of the neck should be properly evaluated to provide baselines to a healthcare provider in order to help them determine the most appropriate sport planning treatments, similar to any other peripheral joint injury. Chiropractors specialize in musculoskeletal injuries and conditions, focusing on restoring the natural alignment of the spine and improving its strength, flexibility and mobility. A chiropractor, along with other healthcare professionals, can perform a variety of evaluations and assessments to properly diagnose the presence of a sports injury, most commonly, neck injuries.

The structure and function of the cervical spine is complex, where the vertebra primarily contribute to the varying degrees of overall neck motion. The change of orientation of every cervical vertebra, from the mid to lower cervical spine, allows for rotation, flexion and extension of the neck, however, this also isolates lateral flexion to the upper portion of the cervical spine. When a healthcare professional determines the baseline range of movement of the neck, it is also essential to understand that this can commonly decrease with age, therefore, a normal range can vary between athletes and is likely to change over an athlete's career.

Neck Range of Motion Stretches

The most reliable standard for measuring the range of movement of the cervical spine is radiological examination but due to expense, this technique is not considered convenient among sporting environments. Many healthcare professionals can easily determine if there's an issue with the individual's neck range of motion and there are several reliable and inexpensive tools which can be effectively used. These include the full-circle goniometer, or simply a tape measure to record the distance between anchor points, which can be easily replicated.

The primary stabilizers of the neck are collectively known as the deep neck flexors, consisting of the longus capitus, the longus colli, the rectus capitis anterior and the rectus capitis lateralis. Without using EMG resources, these can be difficult to isolate but are most active through the commonly prescribed craniocervical flexions, or chin tuck. The most common evaluation utilized to measure the activation and endurance of the deep neck flexors is the craniocervical flexion test and are assessed using a biofeedback device. This assessment serves as a useful baseline test and can be used to acknowledge weakness and movement control dysfunctions. To perform a craniocervical flexion test, the patient lays supine while maintaining the neck in a neutral position. Then, an uninflated pressure sensor is placed behind the neck so that it borders the occiput. The cuff is inflated to 20mm Hg. The movement is described as a slow, head nodding action. The patient must attempt to sequentially target five 2mm Hg progressive pressure increases with 10 second holds.

Previous studies have concluded that the activity of the stabilizers is considerably decreased and delayed in anyone with neck pain and it can be considered a great starting point for all neck rehabilitation treatments to regain stability in the structures of the cervical spine. Postural evaluations are also a key component of neck assessments. The main function of the neck is to optimize head position. Equal displacement of the weight of the head is essential when it comes to minimizing overload to the stabilizing muscles of the neck. Several tests have been developed to aid the assessment of cervical movement control dysfunctions including neck function in four-point kneeling and with upper extremity movement.

Prime Movers

Cervical prime mover strength can be evaluated in several ways including the utilization of isokinetic and isometric dynamometers which can be linked with muscle activity measurements using EMG studies. Generally, cervical extensions are stronger than flexions among popular research while lateral side flexions are commonly grouped with extensions involving a bias towards the individual's dominant angle. Among athletes who depend on a dominant side bias, such as racquet and other throwing sport athletes, for performance advantage, this asymmetry should be understood but not necessarily be seen as detrimental.

In the case an athlete doesn't have access to isokinetic and EMG equipment, baseline strength can be determined using a handheld dynamometer. A healthcare professional should decide on which ranges should be tested to remain consistent while accommodating any sport specific positions if necessary. To ensure all information is regulated, a healthcare professional should make sure the individual's torso is stabilized while minimizing lower limb involvement, such as having the athlete's feet on a wobble cushion, and appropriate ranges should be set to measure the individual's strength through standardized warm-up and testing protocols.

The neck doesn't function in isolation. A relationship between neck pain and shoulder dysfunction has been previously recorded through research, therefore, the entire kinetic chain should be considered when evaluating the function of the neck. Particularly among swimmers, shoulder dysfunctions can frequently lead to hypertonicity of the muscles surrounding the neck which can cause muscle imbalances, dysfunction and pain, all which could eventually lead to further neck injury in the athlete if left without a proper assessment.

Neck Injuries and Concussions

When treating acute neck injuries, healthcare professionals, or chiropractors, among others, should suspect the presence of concussions in athletes due to the increased forces that are transferred between the regions of the cervical spine. After providing the above neck evaluations, a proper assessment on athletes should be carried out to determine if there was any head trauma, or concussion, following a neck injury. Research has concluded that concussions may be associated with the strength of the neck. In fact, studies showed that neck strength is a significant predictor of concussion amongst a large percentage of high school athletes and, although further research is needed, these showed positive outcomes in reducing the risk of concussion when individuals adopt these neck strengthening programs.

In conclusion, cervical injuries can occur in a variety of sporting environments from the result of acute trauma through axial loading, prolonged position exposure, whiplash and external forces, such as vibrations and G forces. All cervical evaluations for neck injuries should rule out severe spinal injury and concussion as well as include range of movement measurements and prime mover strength assessments.

The Stages of Neck Injury Rehabilitation

October 10, 2016

> "Rehabilitation following an accident is one of the primary steps an individual should take, especially if painful symptoms develop. A car accident, for instance, can cause numerous injuries which may require a variety of rehabilitation procedures. From chiropractic care and physical therapy to medical doctors, many healthcare professionals frequently treat injuries resulting from auto collisions. However, chiropractic treatment is the most common form of rehabilitation chosen by individuals who've been involved in a car crash." – Dr. Alex Jimenez, Chiropractor El Paso

A Chiropractor specializes on treating musculoskeletal injuries and conditions, focusing on restoring the health of the spine and its surrounding structures naturally. After an automobile accident, many individuals experience soft-tissue injures. Some common soft-tissue injuries include whiplash, neck pain, back pain, muscle soreness or tightness.

The Stages of Neck Injury Rehabilitation

Rehabilitation after any type of accident causing damage and/or injury to the body is essential for the individual to record the incident in order for the insurance company to follow through with the proper compensation. Individuals who never visit a healthcare professional for their injuries can often have a difficult time dealing with their personal injury claim as its necessary to prove there was an injury after an auto accident or any other type of accident. In the case an individual suffers a visible wound, such as a bone fracture or a head injury, as a result of a car crash, the specialists in the emergency room are trained to properly treat these types of injuries but, soft-tissue injuries can be difficult to detect using an X-ray. Therefore, it's crucial to follow up with a chiropractor or physical therapist to diagnose any possible underlying injuries or conditions which may have resulted from the incident and continue with rehabilitation treatment as soon as possible.

The main goal of rehabilitation is to reduce and/or eliminate the painful symptoms caused by an injury or condition after an accident, ultimately helping restore the individual's mobility and function. With proper documentation of all medical procedures received, a personal injury claim can be pursued accordingly with the insurance company.

There are numerous rehabilitation procedures which can be used to treat whiplash, neck pain and back pain, among other types of injuries and conditions resulting from an auto accident, including chiropractic care and physical therapy, although these aren't limited to only treating symptoms caused by an auto collision. Whiplash, neck pain and back pain can also occur as a result of an accident during an athletic sport or from any physical activity. Regardless of the cause of the injury, rehabilitation procedures can be very similar in nature, especially when treating neck injuries and symptoms.

The Stages of Rehabilitation

Due to an excess of weight or force, a prolonged exposure to specific positions and postures, whiplash and external forces, such as vibrations and G force, athletes can also have just as high a risk of experiencing neck injuries as victims of an automobile accident. Regardless, rehabilitation procedures can be applied to all neck dysfunctions, from acute injuries to simply increasing the peak performance of an athlete or individual. As with all injury management processes, it's essential to understand the type of injury the individual has suffered and which type of rehabilitation plan would be most appropriate to their specific grade of injury, by both the individual and high performance team or coach, if any. The rehabilitation process can be divided into four stages: early management, initial rehabilitation, rehabilitation progression and return to performance.

Early Management

The first stage of rehabilitation, early management, should be started immediately after the athlete or individual has experienced any mild to severe cervical or head injuries and they've been properly diagnosed by a qualified healthcare professional. The key goals in this phase of rehabilitation following a neck injury include, reducing the pain, muscle spasms and other painful symptoms as well as restoring the body's original range of motion. While high quality evidence on the correct management of acute cervical pain is lacking, evidence supports utilizing a combination of therapeutic treatments, such as chiropractic adjustments, massage, electrical stimulation, heat for temporal relief, range of motion exercises and occasional analgesics through the recommendation of a healthcare professional. The individual should also receive postural education to ensure there aren't any compensatory dysfunctions throughout their body, most commonly among the shoulder and/or the thoracic and lumbar spine, as a result of the injury.

In the early management stage, the initial treatment should be carried out with the neck in a neutral alignment and with the head in a position of eliminated gravity to reduce any nerve root, disc or facet joint irritation as well as limit the involvement of overactive muscles. Gentle, range of motion exercises can have great analgesic benefits and should be practiced as soon as possible to make sure there's no aggressive stretching as a result of a muscle spasm, which can ultimately reduce the stability of the neck. Studies have indicated that among individuals with neck pain, the fundamental stabilizers surrounding the cervical spine are inhibited, therefore, these must first be retrained before proceeding with further rehabilitation procedures.

Deep neck flexor training programs can begin immediately and utilizes a pressure cuff to work through progressive pressure increases and holds. Once the individual or athlete can achieve this, avoiding compensation strategies, the routine should be performed independently and constantly throughout the day and can then be progressed to more challenging positions involving increased weight and force.

After reducing the acute symptoms of neck pain, restoring the mobility and function of the cervical spine and its surrounding structures are necessary before the individual or athlete can return to their specific sport or daily lifestyle. If one can activate and maintain deep neck flexors, the athlete or individual can continue to the next stage: initial rehabilitation.

Initial Rehabilitation

This stage of rehabilitation, the initial rehabilitation, is important towards building the strength of the neck without exposing the muscles to any unnecessary, excessive forces. Monitoring and screening should be utilized where available to further assist the programming. Full range of motion and strengthening exercises should continue throughout this stage.

Most commonly, when managing joint injuries, isometric strengthening can be recommended but is often overlooked following many types of neck injuries. Generally, these will begin in a neutral, gravity-eliminated position and then progresses to standing followed by sport-specific or daily, challenging positions. For example, in the winter sliding sport Skeleton, the athlete needs to maintain a certain neck position in relation to the sled. Also, motorcyclists must maintain a specific neck position while on a bike, requiring their balance to be challenged alongside strengthening. Additionally, it's essential to consider introducing helmets or headgear at this stage of rehabilitation.

Initial rehabilitation strength training should begin at a medium volume with low intensity before being gradually increased in terms of repetition, length of contraction and sets. Throughout this stage, athletes and individuals should be monitored for any symptoms, including neck pain and loss of their restored range of motion and flexibility. During an assessment, particular considerations should be made to stabilize the torso and minimize lower extremity involvement in order to ensure a proper strengthening of the neck.

Rehabilitation Progression

During this stage of rehabilitation, rehabilitation progression, when a full range of motion has been achieved in the neck, the focus should then progress to eccentric and concentric neck strengthening exercises. This is frequently an area which is characterized as a weakness through screening and can therefore be utilized for performance development as well as a return from injury.

The individual's background should be carefully considered before establishing the correct programming. For instance, rugby players often have significantly more exposure to neck strength training as compared to a young gymnast returning from injury.

Strengthening exercises and therapies within this stage should have a higher volume with medium intensity and these should be carried out using manual or dynamometry resistance. Cable machines, such as those found in a gym, may lead to overload but these can be utilized as a progression. The principles of overload should be maintained with neck strengthening and gradual improvements can be expected to occur progressively rather than in sudden spikes in training. This is considerably important when understanding the anatomy and the need for stability across many important joints surround the cervical spine.

Once a base strength has been regained, neck training can begin. With contact sports, tackle bags can be used to replicate controlled contact. Divers can also return to low board dives and drivers can follow simulation work. If athletes and individuals are exposed to external forces, such as G force and vibration, this may also be replicated as rehabilitation and injury prevention. If the individual continues to experience no symptoms, their strength can be compared to baseline measures, they have no change in the function of other structures of the body, and they've participated in controlled, normal training situations, including additional external forces, then the individual can continue to the next stage of rehabilitation: return to performance.

Return to Performance

The final stage of the rehabilitation process for neck injuries, return to performance, combines the strength training the individual or athlete has been previously practicing but, with an emphasis on the restoration of specific abilities required for them to return to their specific sport or daily lifestyle, along with allowing them to regain confidence while having specific forces being applied against their cervical spine. Integrating unexpected strengthening loads may be important at this stage of the rehabilitation process. A previous study indicated that training focusing on the initial activation of the muscles surrounding the cervical spine can support the structures against impacts to decrease neck and head injuries caused by automobile accidents and sports alike. This training mode is frequently practiced in rugby prior to going into a contested situation, prior to heading into a football match and also when tumbling in gymnastics. By incorporating training approaches, such as isometric, isokinetic strengthening, exposure to vibration and impacts in and out of specific sports activities, individuals have a higher chance of adapting neural elements resulting in optimal motor skills, muscular control and coordination.

The return to performance stage of rehabilitation can be utilized with any injury, including automobile accident injuries. The general programming should be focused on the athlete or individual while involving the entire team or group, if any. The individual should be physically and psychologically ready to return to their daily lifestyles or specific sport with all strength, skill and confidence issues taken care of to properly reduce their chance of further injury and increase the individual's performance on return.

The Stages of Neck Injury Rehabilitation

Depending on the severity of the injury, sport and position the athlete or individual is returning to, the return to performance protocols may vary greatly from one another. The correct timing of post-injury neck training should be carefully considered when programming as part of a strengthening regime. Neck strengthening is known to cause fatigue and strength can be initially reduced for up to a day. For this reason, heavy neck strengthening training exercises and therapies followed by the return to performance stage of rehabilitation protocol should be avoided to reduce the chance of further injury.

Furthermore, individuals involved in sports with heavier schedules and less recovery days should consider focusing on heavier neck strengthening in pre or mid-season breaks to properly benefit from these stages of rehabilitation. This should also be essential when evaluating the athlete under different levels of tiredness to ensure they are strong enough to withstand the forces they are exposed to while competing.

The Stages of Neck Injury Rehabilitation

In conclusion, all neck injuries, whether they're caused as a result of an automobile accident or due to a sports related injury, should be diagnosed and treated immediately in order to prevent further injury. Rehabilitation should progress from regaining the individual's range of motion and flexibility as well as strengthening the neck and its surrounding structures, to sports specific training. A Chiropractor El Paso also specializes on restoring the individual's original condition before a neck injury by carefully adjusting the spine, primarily the cervical spine in this case, helping to restore mobility and flexibility as well as decrease the irritation and swelling which could be causing the painful symptoms. Overall health is important, and after being involved in an automobile accident or suffering a sport related injury, getting a proper diagnosis and following through with rehabilitation can help ensure the athlete or individual heals as quickly as possible.

For more information, please feel free to ask Dr. Jimenez or contact us at 915-850-0900 .

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By Dr. Alex Jimenez, Chiropractor El Paso

The Stages of Neck Injury Rehabilitation

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My name is Dr.Alex Jimenez D.C.,C.C.S.T, a clinical pain doctor who uses cutting-edge therapies and functional rehabilitation procedures focused on total health, strength training and complete conditioning. We specialize in restoring normal body functions after neck, back, spinal and soft tissue injuries. We take a global physiological treatment approach in order to regain total functional health.

We also use Advanced Chiropractic Techniques, Specialized Diet Plans, Agility Training, Cross-Fit and the PUSH-Rx Rehabilitation System to treat patients suffering from various injuries and health problems.

We have been blessed to perfect our methods with thousand of El Pasoans over the last 26 years. This has allowed us to create fitness and better functional bodies through the researched methods and total programs offered. These programs are natural, and use the body's own ability to achieve goals of improvement, rather than introducing harmful chemicals, controversial hormone replacement, surgery, or addictive drugs. We want you to live a life that is fulfilled with more energy, positive attitude, better sleep, less pain, proper body weight and educated on how to maintain this way of life.

The Stages of Neck Injury Rehabilitation

As an extension to dynamic rehabilitation, we also offer our patients and athletes a diverse portfolio of strength equipment, high performance exercises and advanced agility options. We are very proud to have teamed up with the cities premier therapist and trainers in order to provide high level competitive athletes the option to push themselves to their highest abilities within our facility.

Remember, you are in control of your life. Take control, learn how improve your health for yourself and your loved ones.

With a bit of work, we can achieve optimal health together.

Its all about: LIVING, LOVING & MATTERING!

God Bless

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