

# DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

## Chapter 1 : Stretching vs. ROM

*BarnesSoft tissue changes in contractures. Orthopedic physical therapy series. Stokesville Publishing, Atlanta (GA) ()*

Part 1 - Shoulder Complex by Member on September 28, The presenter spent a lot of time reading her slides. She could have been more effective with more pictures, drawings, videos with verbal explanation rather than reading what she had written on the slide. Part 1 - Shoulder Complex by Melissa on July 8, This course was very informative, and will be very useful in the patient population I work with. I especially liked Dr. Part 1 - Shoulder Complex by Alisa on June 30, I really enjoyed this course and the in-depth explanation regarding the etiology of shoulder contractures and the in-depth explanation regarding adhesive capsulitis. I think that having the speakers personal experience and the explanation regarding things to be cautious of as a therapist was very beneficial. The only reason I did not give the course an excellent rating was because it was difficult to develop a good understanding of some of the positioning and trying to obtain a good mental image. Part 1 - Shoulder Complex by Member on April 19, so far all of your ot. Part 1 - Shoulder Complex by Member on March 23, Contained a lot of good information however much of the focus was on studies done and not enough on actual techniques and interventions that worked and what they produced. Part 1 - Shoulder Complex by Member on March 3, I found most of the course dry and had a difficult time staying attentive My problem not the course. Part 1 - Shoulder Complex by Evelyn on February 19, Thank you very much for the YouTube references I think they will be very helpful in continuing my search for information. I have a sister with thyroid problems and associated pain thanks for the information. The notes on the slides would be more beneficial if reduced to lists rather than full sentences. Thank you very much for this course! Part 1 - Shoulder Complex by Lindsay on November 14, It was very important to hear the truth behind motivation of research studies to consider and to understand why it is so important to observe and understand multiple different research articles and treatment approaches. I enjoyed how the instructor pointed out what therapists do wrong in the clinic and reasons for lack of detail in treatment, able to relate. It opened my eyes on how important it is for each one of us to invest our time in continuing to learn in order to safely treat our patients. Part 1 - Shoulder Complex by Sara on July 31, She was very relatable and made following along with her examples easy and intuitive. Part 1 - Shoulder Complex by Member on June 17, There are so many causes of limited shoulder AROM and in general practice, specific diagnostic details are not always provided. This course practices recognition of processes at work to help determine appropriate treatment response. Inclusion of EBP is also appreciated.

# DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

## Chapter 2 : Arthrogyrosis | Cause & Diagnostic Methods | New York

*Soft Tissue Changes in Contractures (Orthopedic Physical Therapy Series) [Gordon Cummings, Marylou Barnes, Carolyn Crutchfield] on www.nxgvision.com \*FREE\* shipping on qualifying offers.*

The intent of the present study was to determine the effectiveness of massage therapy in the rehabilitation of post-anterior cruciate ligament reconstruction patellofemoral pain syndrome. Treatment included lymphatic drainage, myofascial release, neuromuscular techniques including trigger point release, muscle energy techniques and cross-fiber friction. Orthopedic physical assessment tests were used to chart changes in patellofemoral function and changes in range of motion in the knee during the course of the massage interventions. Subjective reporting on pain level and function were also documented. A decrease in pain level, hamstring flexion contracture and lateral tracking of the patella were documented. Massage therapy was determined to be an effective complementary therapy in the treatment of patellofemoral pain syndrome. Surgical reconstruction of the ACL by 4-strand hamstring graft, patellar tendon graft or allograft have proven to be remarkably effective in restoring function and stability to the injured knee. The three most prevalent complications following ACL reconstruction are quadriceps weakness, flexion contracture of the hamstring muscle group and patellofemoral pain 2. Patellofemoral pain syndrome PFPS has become the "catch-all" diagnosis for the variety of symptoms related to anterior knee pain following ACL reconstruction, including quadriceps weakness, flexion contracture and vastus medialis oblique and vastus lateralis timing dysfunctions 3. Clinical classification of patellofemoral pain syndrome PFPS 3. Hamstring Flexion Contractures Flexion contractures are an inability of the collective hamstring muscle group, which includes the biceps femoris, semitendinosus and semimembranosus, to fully lengthen and allow the knee joint to extend. Flexion contracture is traditionally tested and measured by noting heel-height difference with the patient in the prone position. Every 1 cm of heel-height difference correlates with 1 degree of flexion contraction 2. This increase in hamstring activity and contraction prevents anterior translation and limits medial rotation of the tibia, protecting the knee joint from excessive pivoting motion. Injuries to the ACL have been linked to neuromuscular adaptations in the entire leg 8 , 9. Any decrease in quadriceps force, as found in quadriceps reduction and avoidance patterns, is an effective method for knee stabilization during gait, apart from mid-stance, when the knee nears full extension Once the ACL has been surgically repaired, this protective reflex to limit medial rotation and anterior tibial translation via hamstring facilitation is no longer necessary. For example, in their study on the effects of knee-joint effusion, Torry et al. As Solomonow et al. Prolonged flexion contracture can lead to the development of myofascial trigger points that would result in referred pain, segmented movement and decreased range of motion Myofascial release may be beneficial for any scar tissue or adhesion development within the contracted hamstring muscle group Quadriceps Weakness and Inhibition Weakness in the quadriceps following ACL injury and reconstruction has been noted in numerous studies and has been linked to intra-articular effusion, hamstring facilitation, inhibition of the vastus medialis oblique and neuromuscular recruitment of the hip and ankle muscle groups 2 , 8 , The vastus medialis oblique was most significantly affected by the presence of intra-articular swelling; the vastus lateralis and rectus femoris were affected when larger volumes of effusion were present. Patellofemoral Tracking The function of the vastus medialis oblique in patellofemoral tracking is to prevent lateral subluxation of the patella during knee extension 16 The vastus medialis oblique exerts a medial pull on the patella against the lateral pull of the vastus lateralis. The proper timing of the coordinated muscle contraction of the vastus medialis oblique and vastus lateralis is essential for correct patellofemoral tracking. Dysfunctional timing or strength imbalances, or both, between the vastus medialis oblique and the vastus lateralis, as a result of vastus medialis oblique inhibition, can lead to lateral subluxation of the patella, increased patellofemoral contact, retropatellar pain and degeneration of articular cartilage 3 , Furthermore, Grelsamer stated that patellar malalignment is associated with tightness in the lateral retinaculum, hamstrings, iliotibial band, quadriceps, hip rotators and Achilles

## DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

tendon In the PFPS client, the primary focus for establishing proper patellofemoral tracking is to increase flexibility in the hamstrings, gastrocnemius, rectus femoris and iliotibial band, and to develop vastus medialis oblique control and strength. Massage Therapy Studies have proposed a correlation between the three most common complications in ACL reconstruction, suggesting that flexion contractures lead to an increase in patellofemoral contact, producing patella irritability and anterior knee pain 2. Intra-articular knee-joint effusion, common in all knee injuries and surgeries, resulted in an inhibitory reflex in the quadriceps, with the vastus medialis oblique showing the most dramatic inhibitory response 8. The vastus medialis oblique is a dynamic stabilizer of the patella, and any delayed or diminished contraction of the vastus medialis oblique can negatively affect alignment of the patella This causal relationship, as shown in Figure 2, demonstrates the importance of postoperative rehabilitation to prevent PFPS development. In a literature review using PubMed, keyword searches for ACL reconstruction rehabilitation, anterior knee pain and ACL reconstruction, patellofemoral pain syndrome rehabilitation, retropatellar knee pain, patellofemoral dysfunction, knee joint flexion contracture, massage therapy and orthopedic massage located no published peer-reviewed studies on the effectiveness of integrating massage therapy into the postoperative rehabilitation of ACL reconstruction. Nor were any studies found on the effectiveness of massage therapy for PFPS. The objective of the present case report was therefore to determine the potential role and effectiveness of massage therapy in the post-ACL reconstruction PFPS rehabilitation protocol. Researching the effectiveness of massage therapy may provide a better understanding of PFPS onset following ACL reconstruction and may ultimately improve patient rehabilitation. METHODS Client Profile A year-old female athlete sustained complete ACL rupture, torn medial meniscus and grade 3 tear of medial collateral ligament of her right knee from a noncontact injury while backcountry skiing. The grade 3 tear of the medial collateral ligament was not surgically repaired. Subject completed a week course of physical therapy post surgery. The following winter, the subject was unable to return to skiing at pre-injury level or intensity. Subject noted that she had developed a "grinding" sensation in her right knee while ascending and descending stairs and an audible "click" when raising and lowering from a seated position 6 - 7 months post-ACL reconstruction. One year post-ACL reconstruction, subject returned to physical therapy with lingering retropatellar pain, weakness and "grinding" in the right knee, with audible "click" at degrees extension. Subject underwent arthroscopic surgery 4 days later for debridement of patellofemoral cartilage to reduce crepitus and clicking. Multiple studies have confirmed the common incidence of coupled multi-ligament and meniscus injuries in alpine skiing 24. However, these studies reported that ACL-medial collateral ligament-lateral meniscus tears were 9 times more likely to occur than were ACL-medial collateral ligament-medial meniscus tears 23. It is clinically interesting to note that the subject underwent ACL reconstruction 4 days after injury. Assessment One week before arthroscopic surgery, the subject was seen by a nationally certified massage therapist specializing in orthopedic and sports massage to establish baseline assessment, treatment plan and goals. Subject complained of right knee pain climbing stairs and while raising and lowering from a seated position. Regular physical activities "hurt too much to be fun. Pain level 4 was indicated on the functional numeric 0 - 10 pain scale Table 1. By 12 weeks post surgery, subject wanted to be able to hike up and down hill pain-free using trekking poles for additional balance and stability. Table 2 The Kendall Key to Muscle Grading 27 Four orthopedic physical assessment tests were conducted to evaluate for patellofemoral dysfunction: The active patellar grind test is performed with the subject seated on the edge of an exam table, knees flexed to 90 degrees and feet dangling. The therapist then palpates for the location in the range of motion that pain, or crepitus with pain, are felt In the lateral pull test, the subject is positioned supine with legs extended. The subject contracts the quadriceps while the therapist watches and lightly palpates for movement of the patella A positive indication of the lateral pull test is determined by deviation of the patella from equal superior and lateral movement with quadriceps contraction. The step-up test begins with the subject standing parallel to a small step or stool 10 inches in height. The subject is asked first to step-up sideways onto the stool using the unaffected leg with no assistance from the affected leg. The test is then repeated on affected side, with a reminder to the subject to

## DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

use only the affected leg to execute the step-up. Inability to perform the test may indicate quadriceps weakness, patellofemoral dysfunction or inability to stabilize the pelvis. The Waldron test assesses for patellofemoral dysfunction. The therapist palpates the patella while the subject performs several controlled slow, deep knee bends. The therapist notes crepitus with pain, "catching" and tracking of the patella through the range of motion. The report subject tested positive for patellofemoral dysfunction on the active patellar grind test, step-up test, Waldron test and lateral pull test. An audible "click" was observed at approximately degrees of knee flexion and extension in the active range of motion and with resisted range of motion. An exaggerated Q-angle in flexion 12 degrees and a positive "bayonet sign" in the right knee were noted with the subject seated and knees flexed to 90 degrees, hip and foot in neutral positioning. Normal Q-angle in seated flexion is 0 degrees. The relevance and reliability of Q-angle measurements in PFPS have been questioned, and therefore little clinical emphasis was given to Q-angle during the present study, beyond noting the bilateral difference in Q-angle measurements between the right and left knees. Using the Kendall Key to Muscle Grading 0 – 10 scale for manual muscle testing, the quadriceps graded at 4, with a gradual release from the test position occurring during range of motion. The vastus medialis oblique was visibly atrophied. A soft compact retractable metric tape measure was used to take anthropometric measurements 28 for effusion and atrophy at the following measurement points: Joint line 5 cm above base of patella 10 cm above base of patella 15 cm above base of patella. The degree of flexion contracture was measured by heel-height difference evaluation. To measure heel-height difference, the subject is placed in the prone position with thighs supported by the end of the exam table and legs relaxed. The therapist palpates for end feel and measures the difference in heel height, where 1 cm equals 1 degree of flexion contracture. To perform the Ober test, the subject is positioned side-lying on the unaffected side. The inferior leg is flexed at the knee and hip for support and stability of positioning. The therapist slowly lowers the superior leg. Contractures in the tensor fasciae latae and iliotibial band are present if the superior leg remains abducted and does not fall toward the exam table. It is important to abduct the superior leg so that the iliotibial band passes over the greater trochanter. Additionally, the therapist must stabilize the pelvis to prevent posterior rotation during testing. A positive Ober test indicated tensor fasciae latae and iliotibial band contractures. Active trigger points were palpated in the tensor fasciae latae, vastus lateralis and biceps femoris. Fibrous tissue was palpated in the superior lateral aspect of the patella and lateral aspects of the iliotibial band – vastus lateralis border, suggesting a degree of myofascial adhesion.

**Treatment Overview** Nine therapeutic massage sessions were given over a week period that began 4 days post arthroscopic surgery. Massages were scheduled weekly, with 2 sessions during week 3 and no sessions during week 4 because of a conflict in scheduling. Sessions averaged 75 – 90 minutes because this duration allowed for the additional evaluation and discussion that are non-typical in the standard minute wellness massage. All physical assessment evaluations were performed before and after the session. Subjective pain and function level were charted by the subject before and after the session and daily between sessions using the 0 – 10 functional numeric pain scale.

**Treatment Plan** The initial treatment goal was to reduce postsurgical inflammation by lymphatic drainage. Once inflammation was managed, the focus shifted to decreasing the hypertonic musculature and increasing the length of the tensor fasciae latae, iliotibial band and hamstring muscle group through muscle energy techniques, including contract – relax antagonist contract – relax, post-isometric relaxation, reciprocal inhibition and myofascial release. Neuromuscular techniques would be used to deactivate trigger points in the tensor fasciae latae, vastus lateralis and biceps femoris. Tender points in the biceps femoris, semitendinosus and semimembranosus were to be addressed with passive positional release. Post-isometric relaxation and contract – relax antagonist – contract were to be used to increase the range of motion in the knee. Fibrotic tissue around the patella would be reduced using myofascial release and cross-fiber friction followed by ice massage to mitigate any potential inflammatory response. Ice massage was self-administered for 10 – 15 minutes by the subject, using a frozen paper cup rubbed in a circular fashion around the patella. Strengthening and facilitation of the vastus medialis oblique and hip adductors would be addressed with isometric and eccentric contractions and by self-care exercises.

**DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES  
(ORTHOPEDIC PHYSICAL THERAPY SERIES)**

Appendix A approved by the treating physician Treatment session 2 was 60 minutes in length, divided into two segments.

## DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

### Chapter 3 : Lumbar Spine Ellen Pong Orthopedics

*Find helpful customer reviews and review ratings for Soft Tissue Changes in Contractures (Orthopedic Physical Therapy Series) at [www.nxgvision.com](http://www.nxgvision.com) Read honest and unbiased product reviews from our users.*

**Objectives** The participant will be able to identify at least three difficulties in selecting effective physical therapy treatments for patients with low back pain. The participant will be able to identify at least two conclusions of recent systematic reviews of conservative treatments for patients with low back pain. The participant will be able to describe at least two examples of current knowledge in conservative treatments for patients with low back pain.

**Introduction** A popular opinion among many healthcare practitioners and payers is that the majority of patients with low back pain will eventually get better no matter what you do. You might have heard that before. I remember the first time I heard that statement, I was a physical therapy aide and one of my responsibilities was to obtain insurance authorizations. I thought then, as I still do now, that many times study results are turned in favor of the payers rather than of the patients. This follows what we usually see in practice. Unless the first episode of acute back pain was caused by a significant injury such as sports or on the job, the patient often does not see the physician. Some of these patients may see the primary care physician to receive palliative medications such as ibuprofen, opiates or muscle relaxers, of that type. They do not return to the physician unless the pain has persisted. Those who return to the physician may be referred to physical therapy for palliative care. However, more often the injury is then thought to be severe enough to warrant films and referral to a specialist. Now, I have to modify this statement just a bit, remembering that some payers do not allow films beyond plain films such as MRI until the patient has undergone six weeks of conservative care, which would be physical therapy. Regardless though, it is true that most of the time the outpatient therapist will not encounter many patients in the true acute stage of low back pain. Can you see pathology in Figure 1? There is a fracture of the pars, so there is a spondylolisthesis. If this were a posterior oblique view, we would notice that the Scotty dog then has a collar. That one was a particularly interesting one to me because it is something that I have and that I actually found on my own films before they were even reviewed. Injure, heal, and then re-injure- this cycle repeats itself with acute and chronic phases repeating often becoming progressively severe with time. Although we will explore palliative treatment in this course, most of the treatment in the evidence presented will be appropriate to patients with chronic phases of recurrent low back pain or continuous chronic low back pain.

**Clinical Prediction Rules** Are you familiar with clinical prediction rules CPRs and do you use them to direct your plan of care? I have mixed feelings about them so we are going to talk about them in this course. When we treat patients with peripheral pathologies such as rotator cuff tears, distal radius fracture, and sprain of the anterior talofibular ligament, we often treat in a tissue-specific fashion. When we treat people with low back pain, both conservatively and post-operatively, often the pathologies involved many tissues. I have a herniated disc at L and hypermobility of the right sacroiliac joint. For example, my sacroiliac joint hypermobility will not be visible on a static film, yet it ranks number 2 in the cause of my most frequent pain. I know that a favorite trick of certain individuals is to take a look at the films and point out something that is wrong and say, "There it is. Patient Example Suppose that I am your patient. Can you really choose treatments based only on the tissue involved? With many patients, we are often not told what the specific pathology is. We are given a referral that says back pain. I have often seen therapists when not given a diagnosis on the referral fail to remember that a person can and often does have more than one thing wrong at a time.

**Definition** More recent studies of best treatment practice for patients with low back pain have attempted to define a set of rules or standards. Patients whose signs and symptoms match these rules derived from the evidence will benefit from a specific treatment. These are called clinical prediction rules. These CPRs are not infallible and are not meant to be used as a cookbook. In fact, studies often conflict in support of specific rules. They basically argue back and forth. Remember that most CPRs have not yet been validated. They have been presented but they have not been tested to make sure, other than

## DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

the original study , that they are valid. Our research is truly in its infancy, yet we can use this preliminary work to give general ideas and direction. There are more treatments than these, but I am going to discuss treatments that have some reference or coverage in the literature even if it is not favorable or the best science. Exercise in General Specific Exercises Currently, exercises are not recommended for patients with acute low back pain with a few exceptions. Height and Associates in , tested long-term up to 3 years effects of basic multifidus work on a stable surface stabilization exercises in patients with first time acute low back pain. They found that specific exercises may be more effective in reducing recurrences of low back pain than medical management alone. Note the emphasis on specific exercises. The immediate goal is to avoid increasing pain or injury. We want to avoid causing the patient statement you might have heard before: They tested basic tai chi exercises versus a stretching program in their abilities to enable posture maintenance with lesser force, improve balance ability and decrease low back pain in young women with acute low back pain. Results were positive for both but greater for the tai chi group. Keep in mind that often these studies are crowded with noise. The experimental group does not receive only the treatment that they are being tested with. They may receive, for example, exercises with manual therapy or exercises with modalities and then be compared to control groups who received all of the above except for exercises. At the end of the day then, we really cannot say that the exercises themselves made the difference. Although, I have seen that they do try to say this in the literature. A Physical Therapy Reference Manual. At this time, published CPRs for treatment of low back pain appear to be limited to manual therapy manipulation and to stabilization exercises. Additionally, it is difficult to find the effectiveness of stretching as an isolated intervention. Stretching is normally part of a larger treatment program. For example, how many times you have treated a patient for any problem with only stretching? That is not usually the way we work as rehab professionals. With that said, we have to remember that studies of any specific treatment need to start with isolating that treatment and proving that it does do what we think it does. Then additional studies can assess the effectiveness of this proven valid treatment in a combined treatment plan and report on that aspect. Stretching is favorably reported in the literature for effective use of low back pain when combined with strengthening. I want to mention that McKenzie and Mulligan techniques may not be what we think of when someone says stretching flexibility exercises probably because their purpose is more comprehensive than a muscle stretch. Yet, I am seeing them included in this classification more and more so I have done so as well here. I can say from my own part that if you have to sleep with a pillow beneath your knees for 20 plus years in order to decrease the pain enough to sleep, you will develop hip flexor tightness. You can stretch all you like but after 6 or more hours a night for years in a shortened position, the muscle and tissue will have its way. Therefore, do not forget to discuss sleeping positions with your patients as part of their stretching and mobility. We as a profession had been dilatory in providing evidence to support this suggestion. Indeed, Foreman and peers demonstrated that success in hamstring lengthening has made no change in lumbar mobility or curvature. Length Changes Does stretching really add length, additional sarcomeres to the hamstrings, and is this accomplished with second stretches? My opinion is based on my knowledge of the subject and not on anything in the literature. What is it that we are seeing when the patient is able to touch fingertips to the floor after a week of stretching? I believe that the difference is the ability to access the full length or greater length of the muscle than before the stretching began. The original length has not changed. This is a functional rather than a structural change. Stretches performed for 2 minutes and less do seem to allow relaxation of the muscle. If the muscle is relaxed, more of its true length may be utilized. Perhaps this is the reason why increases in hamstring muscle length have not shown a cause and effect with changes in lumbar mobility or curvature. The muscles are flaccid at that level of general anesthesia. Another factor to consider is that the muscle tenseness we encounter with pain. When you hurt to move, your muscles tend to automatically guard against movement, increasing their tension even at rest. Role in Treatment Does this mean that we should omit stretching from treatment for low back pain? We must ask ourselves a few questions as to what we think we can accomplish and what our motivation for is in utilizing these stretches. First, is a relaxed muscle likely to pull less on a painful muscle joint or other structure? I can not say for

## DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

certain, but logic and reasoning tell me that a relaxed, more elastic rope will pull less than a tight one, and nothing that is painful benefits from being yanked on constantly. Next, are the stretches we choose to use causing increased pain or injury to the patient? If we are causing an increased pain to the patient with stretches, then we are rather defeating our purpose here. I am a big fan of stretches that use gravity as the force so that the position can be maintained for 2 to 5 minutes without additional tension, simply taking the muscles and joint tissues to their non-painful limit and consciously relaxing there. Then last, are we using them to add time to our charges for treatment as fillers? I hate that last question, but we have to answer it very honestly, as I am the first to say that some clinics do tend to emphasize billable units and productivity of the therapist. This challenges us to walk a fine line in our ethics between meeting the productivity standards and treating the patient with only what is needed and beneficial. These exercises, like any others, are not condiments like salt to be sprinkled into a treatment plan for a balance of stretching, strengthening, modalities, and manual therapy. There must be a specific need and purpose for them. This way we can justify including treatment that is not yet supported strongly in the literature. Recommended Stretches Which stretching exercises are recommended? Very few specific stretches have been supported in the literature.

## DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

### Chapter 4 : Papers with the keyword contractures AND physical therapy (Page 2) | Read by QxMD

*Contractures in neuromuscular diseases develop due to intrinsic myotendinous structural changes and extrinsic factors. Static Positioning Weakness and inability to achieve active joint mobilization throughout the full normal range is the single most frequent factor contributing to the occurrence of fixed contractures.*

Arthrogryposis may also be referred to as amyoplasia or arthrogryposis multiplex congenita AMC. Escobar syndrome is a form of arthrogryposis where there is skin webbing at the joints pterygium. The severity of the disease varies from person to person. Treatment varies according to the cause and severity of the condition and may include physical therapy, casting, surgery, or a combination of these options. In many cases, when treatment begins at an early age, children can gradually become stronger and experience improved joint mobility and function that lasts the rest of their lives. Scoliosis a curvature of the spine may be present in some children as well. The cognitive function of children with the condition is not affected. In fact, they are often extremely bright and communicative. CAUSE There is no one specific cause of arthrogryposis but the most common causes are genetics and intrauterine viruses. Genetic causes often only involve the hands and feet while other causes typically result in more generalized weakness and contractures. Given the various possible causes of arthrogryposis, proper diagnosis plays a very important role in determining treatment. Arthrogryposis requires very complex treatment and should only be undertaken by physicians, surgeons, and allied health professionals who are not only familiar with the disease but also have a high level of expertise in treating arthrogrypotic patients. To achieve the best functional outcomes, I take into account the underlying muscle strength of the patient, outline realistic goals, assess the potential benefits of treatment, and partner with an exceptional team of experienced medical professionals to provide treatment. This ensures that children do not undergo multiple painful surgeries that make very little change in their condition. In some cases it may be possible to correct arthrogryposis to some degree with therapy alone. For example, newborns are often most affected at birth with contractures that might include hyper-extended knees, flexed hips, or clubfeet. Therapists can often achieve significant correction in the first six months of life followed by work on activities of daily living activities and walking. Therapy may include mobilization, casting, and splinting that would be ongoing in addition to any other treatments. Psychosocial and Emotional Therapy Any physical disability can have an impact on body image and all children who have multiple surgical procedures require a strong support system in order to thrive. Having your family work with experienced psychologists, social workers and child life specialists is essential for an overall happy child. Soft Tissue Release Contractures are caused by shortened or abnormally tight soft tissue which prevents limbs from moving as they should. In soft tissue releases, contractures are relaxed by cutting the tight muscle, tendon, or ligament which allows the limb or extremity to move more freely. On some surgical procedures, I partner with a highly skilled wound plastic surgeon. We have been thrilled with the outstanding results of working in tandem on cases such as severe knee contractures with and without webbing pterygium. Tendon Transfer A tendon is a tough type of tissue which connects muscles to bones, keeps limbs in position, and plays an important role in the movement of body parts. Osteotomy Curved bones in many arthrogrypotic children can be corrected through casting but surgery may be required in cases that are complex or involve older children. An osteotomy is a surgical procedure where a curved or deformed bone is broken and reset. Taylor Spatial Frame , Ilizarov Frame , etc. The tension of the wires can be adjusted to allow force to be distributed through the top and bottom discs of the frame. This relieves stress from the osteotomy site while the bone re-aligns and tissues in the limb are slowly stretched. Growth Modulation Growth plates physeal plates are bits of cartilage that are present in children and adolescents. The plates are located at the ends of the long bones ex: Growth modulation is a minimally invasive procedure that temporarily alters the growth plate to allow bones to be straightened. Parents might feel discouraged and the situation may seem hopeless but after treating many patients I know that we should never give up.

## DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

### Chapter 5 : Contracture - Wikipedia

*- avoid contractures/pressure sores - avoid patient discomfort during treatment session. (Be mindful though that a position of comfort for extended periods of time may lead to development of a soft tissue contracture).*

The likelihood of the onset of Arthrofibrosis increases with prolonged immobility of a joint. Physical Therapists are trained to mobilize a joint. These are specialized manual techniques that will stretch the scar tissue. Follow the advice of your Physical Therapist to help prevent arthrofibrosis of a joint. Our simple day-to-day activities depend upon joints that move freely through a complete range of motion without pain. Stiffness, pain, difficulty moving a joint is an indication that something is wrong. Arthrofibrosis is one of the most debilitating joint conditions and can cause pain and discomfort whether moving or sitting still. Arthrofibrosis is an inflammatory condition in which an excess amount of scar tissue forms within the static stabilizing structures and at times in the joint itself. Patients may experience the effects of arthrofibrosis after a trauma to a major joint. The synovial joint is the most commonly injured joint. This type of joint uses fluid synovial fluid to provide lubrication, nourishment and protection to the articular surfaces of bones. These structures are the capsule and ligaments of the joint. A trauma to the joint can cause the scar tissue to develop. The trauma can be in the form of an arthritic change, surgery, fracture sites, severe soft tissue damage and almost anything that causes the inflammatory process to occur. This excess scar tissue forms within the static stabilizing structures and at times in the joint itself. This results in pain and limited motion, which can cause other problems within and around the joint such as atrophy of the muscles, soft tissue contractures and softening of the articular cartilage. The cause of the condition can be a global response that the patient suffers from and is referred to as primary arthrofibrosis. The cause for this global, systemic response is puzzling and unknown at this time. There are theories that link this type of arthrofibrosis to the chronic inflammatory response and suggest that there might be an auto-immune component. The other type of arthrofibrosis that is encountered in any orthopaedic physical therapy center is secondary arthrofibrosis. This is a local response to some type of trauma and remains in one joint. Unfortunately, if it is not treated successfully other joints in the kinetic chain can be adversely affected. Physical Therapy plays a vital role in the restorative process for arthrofibrosis regardless of what treatment is implemented. Initial treatment usually involves the administration of anti-inflammatory drugs and a thorough physical therapy rehabilitation program. The key to the treatment is to be aggressive enough to restore motion, but not too aggressive and cause an elevation of the inflammatory response. The physical therapist designs a program that focuses on restoring motion first and addresses strength gains later. The exercise routine should be performed in a low level of pain and an attempt should be made to perform the movements with proper movement patterns. Passive stretching and manual mobilizing techniques are utilized extensively in the first phase of this type of rehabilitation. The therapy sessions are usually long and at times grueling. There is pain when The Physical Therapist must stretch and mobilize the involved joint to stabilize the bones and apply a force directly to the scarred tissue. While this is usually painful, it is an important part of recovery. This type of specialized stretching and mobilization can provide a force that is great enough to elongate the scarred, shortened tissue but not cause extensive damage and enable the inflammatory process to get out of control. General stretching is a must, but in most cases not sufficient to overcome the detrimental condition of arthrofibrosis. There are times that the condition requires surgical intervention. The surgeon will restore most of the lost motion while the patient is under the effects of anesthesia. Once again, physical therapy is essential in order to maintain and develop the positive results of the surgery. A weeks post op physical therapy rehabilitation program is vital. The focus of the rehabilitation program is strictly maintain the motion that was gained during surgery and keep the inflammation under control. Arthrofibrosis is a condition that can be treated successfully and the physical therapy program must focus on motion prior to strength to ensure that the joint can move through its full range of motion. Once that has occurred usually passive motion is achieved first then the focus can slowly change to a strength

**DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES  
(ORTHOPEDIC PHYSICAL THERAPY SERIES)**

development program which will provide the patient the capability to regain their full functional use of the involved joint.

## DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

### Chapter 6 : ARTHROFIBROSIS AND PHYSICAL THERAPY - ACE Physical Therapy and Sports Medicine

*This course series will explore conservative treatment combinations including modalities, Botulinum toxin injections, dynamic and static splinting, and hands-on soft tissue and joint mobilization for patients with soft tissue and joint contractures of the upper extremity.*

Advanced Search Abstract Background and Purpose. Ankle plantar-flexion contractures are a common complication of brain injuries and can lead to secondary limitations in mobility. The patient was a year-old woman with left hemiplegia following a right frontal arteriovenous malformation resection. After a tibial nerve block, an adjustable ankle-foot orthosis was applied 23 hours a day for 27 days. Adjustments of the orthosis were made as the contracture was reduced. The patient received physical therapy during the day period for functional mobility activities and stretching the plantar flexors outside of the orthosis. The application of an adjustable ankle-foot orthosis following a tibial nerve block, as an addition to a physical therapy regimen of stretching and mobility training, may reduce plantar-flexion contractures in patients with brain injury. Contractures are a common complication in people with central nervous system injuries. Spasticity has been defined by Lance 3 as a velocity-dependent response of muscle to passive stretching. Paresis has been defined as muscle weakness in upper motoneuron lesions as a consequence of inadequate recruitment of lower motoneurons. Contractures resulting from adaptive shortening of muscle have traditionally been managed by a combination of interventions, including manual passive range of motion PROM and passive lengthening through prolonged positioning. Low-load, long-duration tension produced greater elongation of tissues than heavier loads applied over shorter periods of time. Consequently, a low-load prolonged stretch is often effective for reducing contractures. No statistically significant length gains were found over the hour measurement period. Bohannon 31 evaluated 8-minute stretches of the hamstring muscle over 3 consecutive days in young subjects without known pathology, also finding no significant change in ROM during straight leg raises. Additionally, the small increases in the angle of ROM were mostly lost after 24 hours. Light et al, 27 in treating knee extension contractures, compared low-load prolonged stretches LLPSs of 1 hour twice daily, 5 times a week for 4 weeks with the application of 3 high-load brief stretches HLBSs of 1 minute over the same time period and treatment frequency. These subjects were nonambulatory geriatric nursing home patients, with no specific diagnosis mentioned. Similarly, Halbertsma and colleagues 33 found that the acute short-term effect of repeated manual passive stretching of short hamstring muscles was negligible in subjects without known pathology. In this study, the hamstring muscles were stretched as far as the subject allowed and then immediately returned to the horizontal starting position of the leg. This stretch was repeated 5 times with 2-minute intervals between sessions. Although some studies 34 , 35 have indicated that a stretch of as short a duration as 15 seconds may be sufficient for increasing ROM, these results were based on subjects who did not have neurological problems or ROM limitations. Rothstein et al, 12 in a conference of physical therapists reviewing current approaches to intervention for plantar-flexion PF contractures, concluded that poor carryover usually occurs with stretching of a short duration. Furthermore, progressive contracture was noted in these children when the soleus muscle was elongated for less than 2 hours a day. As an adjunct to intervention, serial casting has been used commonly and effectively for over 20 years to manage contractures in patients with brain injury. Moseley 16 found similar improvements with patients with traumatic brain injuries. After 7 days of casting combined with stretching, the mean increase in ankle was The ankle DF PROM of a control group of patients decreased when not treated with serial casting and stretching, suggesting that PF contractures do not tend to resolve spontaneously without intervention in these patients. When using serial casting, casts usually are removed after several days to 1 week and are reapplied when the tissues that constrained the motion are lengthened. Limitations include lack of attention to active movement, 21 length of time for application, 12 skin breakdown, 39 , 40 and restricted use of the casted extremity. Studies evaluating the long-term affects of serial casting are limited, and most involve children.

## DOWNLOAD PDF SOFT TISSUE CHANGES IN CONTRACTURES (ORTHOPEDIC PHYSICAL THERAPY SERIES)

Brouwer et al 41 compared serial casting in children who were classified as idiopathic toe-walkers and children with spastic CP who toe-walked. Decreased resistance to passive stretch and increased DF ROM were seen in both groups, but were better maintained in the children who were idiopathic toe-walkers. The authors suggested that the decline in some of the children with CP 6 weeks after casting reflected the persistence of abnormal neural drive to the plantar-flexor muscles despite the immediate effects of serial casting. Cottalorda et al 42 also studied the effect of serial casts on toe-walking in children with CP. They found a mean increase in DF PROM from an initial angle of 3 degrees to 20 degrees immediately after removal of the casts. An average of approximately 3 years later, however, the mean DF PROM had decreased from 20 degrees to 9 degrees, indicating a persistent but limited carryover effect. An alternative method to reduce contractures through a low-load prolonged stretch incorporates the use of an orthosis to maintain the joint in a position of stretch.

### Chapter 7 : Pineville Rehabilitation & Living Center | Rehabilitation Services | Nursing & Rehabilitation

*Orthopedic physical therapy series. Stokesville Publishing, Atlanta (GA) ; Google Scholar See all References Therefore, evidence-based practice is often lacking in the clinical management of contractures.*