

Case Report

Rehabilitation following Medial Meniscus tear and Lateral Tibial Plateau fracture managed conservatively: A Case Report

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ABSTRACT

Background and purpose: Dashboard injuries with forced lateral rotation of the leg can cause tibial plateau fractures with medial meniscus and ACL injuries. Tibial plateau fractures are difficult to treat and can have devastating effects such as discomfort, deformity, restricted ROM causing early degenerative changes in the knee joint. The purpose of this case report is to explain the physiotherapy intervention options and to assess their success in the conservative management of such injury.

Case description: 33-year-old female presented to physical therapy with severe pain over the right knee while standing, unable to bend or straighten the knee and had a feeling of giving away of knee while walking since the time patient experienced a fall from her motorcycle. The condition was managed with supervised and unsupervised physiotherapy for 8 weeks. Intervention consisted of patient's education about the condition, immobilization, electrotherapeutic modalities, exercise therapy, posture, gait, balance and proprioception training and counselling for 8 weeks, six days a week, for 45–60 minutes each day.

Outcome: The patient gained the knee ROM and strength in the lower extremities while achieving all short-term goals. She began ambulating independently and was mobile and autonomous in most situations. Her Oxford knee score improved by 75%.

Discussion: It has been demonstrated that physical therapy interventions are helpful in reducing patients' functional limitations. Due to a lack of supporting data, this case report describes specific procedures that were used to reduce functional restrictions caused by a medial meniscus rupture and a lateral tibial plateau fracture.

KEYWORDS: Meniscal cartilage, intra-articular fracture, physical therapy, ambulation, functional status.

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INTRODUCTION

Common intra-articular fractures that can result in severe disability include tibial plateau fractures. 36% to 47% of tibial plateau fractures had meniscal tears [1].

A meniscal tear should be managed conservatively or surgically depends on the type and extent of tear [2]. Flap tears usually causes severe instability in the knee joint and can further lead to early degenerative changes in

young individuals and mostly are managed surgically. The majority of studies advise beginning treatment with a trial of supervised exercise alone. Recent research has indicated that meniscectomy is more likely to result in early degenerative changes in the knee joint than non-operative treatment [3]. If a tibial plateau fracture is stable to varus or valgus stress, it is typically managed conservatively [4].

There are lack of studies reporting on non-operative management of acute meniscal tears with tibial plateau fractures in young patients. This case report is focused on rehabilitation following medial meniscus injury with tibial plateau fracture managed conservatively.

CASE DESCRIPTION

Patient History: The patient gave written consent to take part in this study. A 33-year-old female came to the outpatient physiotherapy clinic with severe pain and swelling over the right knee joint, the feeling of giving away of the knee while walking, and difficulty in bending or straightening the knee after she experienced a fall from her motorcycle around 5 weeks before. There were no signs of any neurological symptoms post-trauma. She described the pain as gradual in onset, dull aching, aggravated with sit-to-stand, standing, or walking and scored it 10/10 during activity and 8/10 during rest and post medications on the numerical pain rating scale. She was taken to a nearby hospital immediately after the accident where an X-ray was taken which showed an undisplaced fracture of the lateral tibial plateau for which she was advised for immobilization using a long knee brace for 3 weeks, medications for 20 days, and cryotherapy. Later since the pain didn't reduce, she was asked for MRI which showed, an undisplaced fracture of the lateral tibial plateau with marrow edema in the upper end of the tibia and fibula, horizontal tear of the body of medial meniscus with inferior flap tear of the posterior horn with flipped fragment in intercondylar region, midsubstance tear of ACL, mild suprapatellar bursal effusion and partial Discoid medial meniscus. She was then advised for rest, ice, compression, and immobilization with Crape bandage for another 2 weeks followed by physical therapy.

Since the 6 weeks of immobilization period was not completed, we advised her for the same for another 2 weeks. Patient's biggest worries were her ability to work, capacity for selfcare and lack of autonomy in daily living tasks. The patient's physiotherapy objectives included to restore her ability to walk, increase strength and range of motion in her right lower extremity and enable her to get back to work. Her job requires sit, stand, move around places and climb up and down the stairs.

Examination – Test and Measures: At patient's initial visit, a thorough examination was done. The left lower extremity results served as a baseline for the right lower extremity measuring strength, flexibility, sensation and palpation. The Oxford Knee score (OKS) was used to measure patient's subjective level of function. The Oxford knee score has been shown to have a great test – retest reliability, an outstanding intra-class correlation coefficient and excellent inter and intra rater reliability [5]. The patient acknowledged that washing and drying herself, using public transportations, walking, squatting, kneeling down, moving around in bed, household shopping and stair climbing presented the most challenges and described her pain as severe with the feeling of 'giving away' of the knee. With the OKS of 89.58%, she was classified as having a severe level of impairment. The Numerical Pain Rating Scale (NPRS) has been shown to have good reliability and validity in assessing knee pain. [6] NPRS scored 10/10 during activity and 8/10 during rest. A typical 12-inch goniometer was used to measure passive range of motion (PROM) and active range of motion (AROM) in accordance with Norkin and White's instructions [7,8]. The patient initially had PROM and AROM impairments in the right knee (Table 1). The Goniometer is found to be a reliable tool for assessing the Q-angle of the knee joint [9]. The Q-angle at baseline was found to be 25 degrees. The examiner conducted manual muscle tests (MMTs) using Kendall's scale of zero to five to gauge strength [10]. There were global strength deficiencies across the patient's right lower extremity (Table 1). Light touch examination was used to measure the patient's feeling

Table 1: Prognosis/Improvement in the scores of outcome measures.

| OUTCOME MEASURES | BASE LINE | | AFTER 4 WEEKS | | AFTER 8 WEEKS | |
|------------------------------------|--------------|-------------|---------------|-------------|---------------|-------------|
| Pain (on NPRS) | | | | | | |
| • On rest | 08/10 | | 02/10 | | 0/10 | |
| • On movement | 10/10 | | 05/10 | | 02/10 | |
| Limb Girth (swelling in cm) | | | | | | |
| • Suprapatellar | 40.5 | | 42 | | 42 | |
| • Joint line | 38 | | 38 | | 40 | |
| • Infrapatellar | 35.5 | | 36.2 | | 36 | |
| Active Knee Flexion ROM | 117° | | 120° | | 122° | |
| Muscle Strength (MMT) | Right | Left | Right | Left | Right | Left |
| • Quadriceps | 2 | 4 | 3 | 5 | 4 | 5 |
| • Hamstring | 3 | 4 | 3+ | 4 | 4 | 4+ |
| • Gluteus Medius | 3 | 4 | 3+ | 4+ | 4 | 5 |
| • Gluteus Maximus | 3 | 4 | 3+ | 4+ | 4 | 5 |
| • Gastrocnemius | 4 | 4+ | 4+ | 5 | 4+ | 5 |
| • Soleus | 4 | 4+ | 4+ | 5 | 4+ | 5 |
| Q-Angle | 25° | | 18° | | 17° | |
| Oxford Knee Score | 89.58% | | 53.12% | | 14.58% | |

throughout her lower extremity bilaterally, and it revealed intact light touch. On palpation, tenderness was present over the medial and inferior aspect of knee joint. A measuring tape showed excellent reliability and validity for assessing the limb girth [11]. It was found to be increased in the right limb showing severe generalized swelling over the knee joint (Intraarticular - predominant over the suprapatellar, infrapatellar and around the quadriceps muscle girth). Observational videotape gait analysis showed that she had antalgic gait with a prolonged swing phase on the affected side and hiking of right pelvis with insufficient hip extension and decreased knee flexion [12]. In both lower extremities, where the right patella showed reduced mobility and tibial translation hypomobility, joint mobilizations were done to evaluate joint mobility.

Clinical Impression:

Evaluation, Diagnosis, Prognosis: The initial clinical impression was validated in light of the initial evaluation results, and the patient was qualified to take part in competent physiotherapy procedures. Significant deficiencies in right lower extremity strength, range of motion, flexibility, tissue extensibility and gait were noted in the patient. Notwithstanding these structural and functional limitations, which reduced the patient’s tolerance for ADLs such as ambulation, bending and squatting activities,

personal care tasks, transfers, as well as work-related tasks, the patient continued to be appropriate for this case study. The main physical therapy diagnosis for this patient was difficulty walking, and the medical diagnosis was undisplaced fracture of lateral tibialplateau with horizontal tear of body of medial meniscus with inferior flap tear of posterior horn with flipped fragment in intercondylar region with midsubstance tear of ACL. The patient’s prognosis was deemed to be excellent because of the patient’s age and sex, BMI, stair climbing, work-related kneeling and squatting, dependable family, and powerful inducement to return to work and raise ADL tolerance [13].

At each treatment session, the patient’s subjective remarks and a functional daily assessment were recorded. Every 30 days, progress reports were completed. These reports included the patient’s OKS, the physical therapist’s new assessments of limb girth, range of motion, strength, flexibility and Q-angle. The planned frequency for therapy was set at six visits per week for eight weeks. The factors guiding rehabilitation post Tibial plateau fracture with meniscal injury include appropriate immobilization period for fracture healing and normal joint congruency, correct selection of exercises to improve the strength of the proximal and distal muscles and for optimal loading over the knee joint and

Table 2: Short- and Long-term goals.

| Short term goals (4 weeks) | Long term goals (8 weeks) |
|--|--|
| The patient will be able to do full weight bearing walking in order to enhance fracture healing and improve ambulation. | In order to use stairs at home and at work, the patient will be able to ascend and descend 10 to 15 flights of steps in a reciprocal pattern. |
| In order to be independent with self-care tasks, the patient will be able to undertake self-care/dressing activities with less discomfort/difficulty most of the time. | The patient will increase AROM to achieve the full range without any end-range pain. |
| The patient will initiate knee ROM exercises and strengthening exercises for the Quadriceps, Hamstring, Gluteus Medius and Gluteus Maximus and Calf in order to achieve a strength from 3/5 or 4/5 for all the muscle. | The patient will increase strength of lower extremity muscles to facilitate return to prior levels of function. |
| | With a thorough home exercise regimen, the patient will be able to resume their previous level of function while continuing to improve their strength and range of motion. |

appropriate and gradual progression of the exercises to prevent injury due to undue stress. Neuro Muscular Electrical Stimulation was used to increase quadriceps activation, PROM and AROM exercises were used to increase right lower extremity strength, and PROM and AROM

exercises were used to reduce soft tissue restrictions. Goals included improving tolerance to ADLs and enhancing the range of motion and strength of the right hip and right knee. (Table 2) contains a thorough a list of both short- and long-term objectives.

Table 3: Progressive Rehabilitation Protocol.

| Physical therapy Intervention | Week 1-2 | Week 3-4 | Week 5-6 | Week 7-8 | Week 9 onwards |
|--|---|---|---|---|-----------------------------------|
| Immobilization | Immobilization | | | | |
| Weight bearing | Non-weight bearing walker assisted | partial weight bearing walker assisted | Full weight bearing walking with limping | Normal walking | Normal walking |
| Cryotherapy with elevation and compression | 10 mins x twice a day | 10 mins x twice a day | 10 mins x twice a day | Post exercise once a day | Only if there is pain |
| Neuromuscular electrical stimulation for Vastus medialis | 10 mins – faradism under pressure | 10 mins – faradism under pressure | Discontinued | Discontinued | Discontinued |
| Multiple angle isometrics for quadriceps | 10 sec holds at multiple angles of SLR | 10 sec holds at multiple angles of SLR | 15 sec holds at multiple angles of SLR | 20 sec holds at multiple angles of SLR | Discontinued |
| Gluteus Medius and gluteus maximus strengthening | 10 reps of hip abduction in side lying and hip extension in prone | 10 reps of hip abduction in side lying and hip extension in prone x 10 sec holds using ½ kg wt cuff | 10 reps of hip abduction in side lying and hip extension in prone x 10 sec holds using 1 kg wt cuff | Discontinued | Discontinued |
| Active assisted knee range of motion exercises | Few reps - until pain limits the movement | 10 reps with end pressure | 10 reps with end pressure | Discontinued | Discontinued |
| Closed chain kinematic exercise – Bridging and sit to stand from chair | | 10 reps | 10 reps with 5 second holds | 15 reps with 10 second holds | 15 reps with 10 second holds |
| Popliteus muscle strengthening exercises. | | 10 reps | 10 reps | 15 reps | Discontinued |
| Hip muscles strengthening in standing | | 10 reps using ½ kg wt cuff | 15 reps using 1 kg wt cuff | 15 reps using 1 kg wt cuff | Discontinued |
| Eccentric calf strengthening exercises | | 10 reps | 15 reps | 20 reps | 20 reps |
| Wall supports squats, Lunges | | | | 10 reps with 5-7 second holds | 10 – 15 reps with 10 second holds |
| Functional activities such as uphill and downhill walking, stair climbing up & down, marches | | | | 15-20 mins walking, 15-20 stairs, Marches – 30 reps | 20-30 mins walking, 20-30 stairs. |

Procedural Interventions: The patient had manual treatment, during a 60-minute physical therapy session 6 times per week for 8 weeks, patient was engaged in therapeutic activities and therapeutic exercises and a cold pack technique. Each session started with a personal assessment of the patient's reaction to the treatment from the prior session and any beneficial change since the previous therapy session. Additionally, the patient would describe how well she was following her home exercise program. The patient underwent manual treatments such as patellar mobilization, stretches and PROM. Manual patellar glides were performed in all the directions. Right hip and knee flexion manual PROM was carried out in either supine or sitting position to produce the greatest increase in ROM. The patient's deficiencies in knee range of motion, strength, and motor control were treated using Neuromuscular re-education, therapeutic exercises, and therapeutic activities. To introduce aerobic exercise into the patient's therapeutic regimen while respecting her weight bearing status, walking at her own comfortable pace was advised for 20-30 minutes or until pain limits the activity. To treat the patient's quadriceps weakness and motor control issues, Neuro Muscular Electrical Stimulation (NMES) was used with a on: off time of

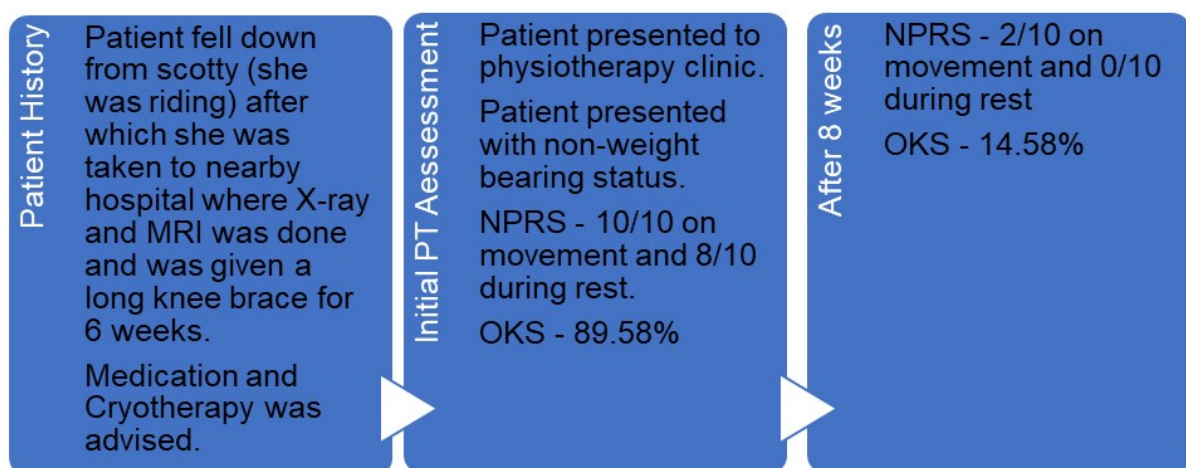
10":10", while the patient was asked to perform short arc quads [14]. To optimize strength recovery and lessen knee stiffness, intense quadriceps strengthening was advised [15].

Regarding a complete list of exercises, please see (Table 3). According to the research, individuals who combine cryotherapy with exercise experience greater gains in strength than those who use either therapy exclusively [16]. The patient received a cold pack method at the end of each therapy session to help ease pain and inflammation. The right knee joint of the patient received cold pack therapy.

OUTCOMES

The patient showed gains in the ROM of the right knee, overall lower extremity strength, ambulation, and functional mobility over the course of the treatment. An improved Oxford Knee Score and official objective assessments reflect these changes. At initial evaluation, her OKS was 89.58%; after eight weeks of treatment, it was 14.58%. Right active knee flexion increased from 117° to 122°, and right knee extension increased from 5° of incomplete extension to 0° of full extension, as was seen, indicating an improvement in AROM. Right Quadriceps muscle strength increased from

TIME LINE



2/5 at the initial evaluation to 4/5, Hamstring muscle strength increased from 3/5 to 4/5, gluteal muscle strength increased from 3/5 to 4/5 and calf muscle strength increased from 4/5 to 4+/5. All of the patient's short-term objectives from the initial evaluation were accomplished, and each of her long-term objectives was at least partially accomplished.

During the eight weeks covered by this case report, the patient underwent professional physical therapy procedures, and continuous care was scheduled. After this case report was finished, more treatment sessions were used to enhance gait training, ADL independence, ROM and strength development, and finally returning to work.

DISCUSSION

In this case report, Physical therapy that was introduced progressively helped a 33-year-old patient who had medial meniscus flap tear with lateral tibial plateau fracture. The plan of care's main contributions were evidence-based research and clinical judgement, both of which upheld a patient-centered viewpoint. The aim of physical therapy intervention was to aid the patient's return to prior level of function by improving the knee active ROM, the gross lower extremity strength, functional mobility, and independence with ADLs. With a better Oxford Knee Score, more strength, increased independence, and functional mobility, the patient appears to have profited from NMES, manual treatment, therapeutic exercise and gait training.

Despite delayed physiotherapy treatment compliance, the patient's range of motion (ROM), strength, and ability to walk on her own all improved. Moderate success with skillful therapy was made possible by a number of favorable characteristics, such as high levels of motivation, an outstanding support network, and great past medical history. The patient required ongoing skilled physical therapies that went beyond the time period covered in this case study in order to further improve her impairments and enable her to return to work with the aim of also achieving a minimal clinically important difference on the OKS. During the eight-week period covered by this case report, improvements were seen despite the modest pace. The outcome measurements revealed that increased ADL independence and functional mobility may have been a result of a combination of manual treatment, stretching and strengthening exercises, neuro re-education, and gait training.

Persistent weakness and accompanying kinematic and kinetic alterations during walking may be caused by quadriceps activation failure following knee joint injury, which may impair the lower limb muscles' capacity to adapt to joint loading correctly [17]. Proper strengthening of the quadriceps muscle seems to be of great importance.

Herrlin et al did a prospective randomized study

on 91 patients where he contrasted arthroscopic partial meniscectomy followed by supervised exercise versus supervised exercise alone as treatments for non-traumatic medial meniscal tears. The Knee Injury and Osteoarthritis Outcome Score, the Lysholm Knee Scoring Scale, the Tegner Activity Scale, and a Visual Analogue Scale for Knee Pain before the intervention, after 8 weeks of exercise, and after 6 months were used to evaluate knee function and physical activity and he concluded that arthroscopic partial medial meniscectomy combined with exercise did not result in more improvement than exercise alone [18].

An accurate treatment approach can help avoid or delay the various post traumatic complications such as stiff knee, delay or unable to return to the desired activity, degeneration of joint cartilage further causing osteoarthritis. Due to any lack of therapeutic measures, post-traumatic osteoarthritis of the knee is highly common. After ligament and meniscus damage, the knee's joint cartilage has undergone modifications that have been detailed in numerous papers. The clinical practice guidelines for Meniscal and Articular Cartilage Lesions provides the Grade of Recommendations (GoR) as follows: (1) Neuromuscular Electrical Stimulation to increase quadriceps strength, functional performance, and knee function [GoR - B], (2) Progressive knee and hip strength exercises under supervision, range-of-motion exercises, and neuromuscular training for surgical and non-surgical care [GoR - B], (3) Supervised rehabilitation [GoR - B], (4) Progressive weight bearing [GoR - C], (5) early, progressive return to activity [GoR - C] [19].

PATIENT CONSENT

A verbal and informed consent was obtained from the patient.

ETHICAL CLEARANCE

The study was approved by the Institutional Ethical Committee of AJ Institute of Medical Sciences & Research Centre (AJEC/REV/03/2023) with a written consent form signed by the patient.

Conflicts of interest: None

REFERENCES

- [1]. Ruiz-Iban MA, Diaz-Heredia J, Elias-Martin E, Moros-Marco S, Cebreiro Martinez Del Val I 2012 Repair of meniscal tears associated with tibial plateau fractures: a review of 15 cases. *Am J Sports Med* 40(10):2289-95. PMID:22962298 <https://doi.org/10.1177/0363546512457552>
- [2]. Yim JH, Seon JK, Song EK, Choi JI, Kim MC, Lee KB, Seo HY 2013 A comparative study of meniscectomy and nonoperative treatment for degenerative horizontal tears of the medial meniscus. *Am J Sports Med* 41(7):1565-70. PMID:23703915 <https://doi.org/10.1177/0363546513488518>
- [3]. Mordecai SC, Al-Hadithy N, Ware HE, Gupte CM 2014 Treatment of meniscal tears: An evidence-based approach. *World J Orthop* 5(3):233-41. <https://doi.org/10.5312/wjo.v5.i3.233> PMID:25035825 PMID:PMC4095015
- [4]. Roos H, Adalberth T, Dahlberg L, Lohmander LS. Osteoarthritis of the knee after injury to the anterior cruciate ligament or meniscus: the influence of time and age. *Osteoarthritis Cartilage* 1995; 3(4):261-7. [https://doi.org/10.1016/S1063-4584\(05\)80017-2](https://doi.org/10.1016/S1063-4584(05)80017-2) PMID:8689461
- [5]. Clement ND, Afzal I, Liu P, Phoon KM, Asopa V, Sochart DH, Kader DF 2022 The Oxford Knee Score is a reliable predictor of patients in a health state worse than death and awaiting total knee arthroplasty. *Arthroplasty* 4(1):33. <https://doi.org/10.1186/s42836-022-00132-9> PMID:35918759 PMID:PMC9345743
- [6]. Alghadir AH, Anwer S, Iqbal A, Iqbal ZA 2018 Test-retest reliability, validity, and minimum detectable change of visual analog, numerical rating, and verbal rating scales for measurement of osteoarthritic knee pain. *J Pain Res* 11:851-856. <https://doi.org/10.2147/JPR.S158847> PMID:29731662 PMID:PMC5927184
- [7]. Norkin CC, White DJ 2009 *Measurement of Joint Motion*, 4 ed. Philadelphia, Pa: Davis.
- [8]. Hancock GE, Hepworth T, Wembridge K 2018 Accuracy and reliability of knee goniometry methods. *J Exp Orthop* 5(1):46. <https://doi.org/10.1186/s40634-018-0161-5> PMID:30341552 PMID:PMC6195503
- [9]. Weiss L, DeForest B, Hammond K, Schilling B, Ferreira L 2013 Reliability of goniometry-based Q-angle. *PM R* 5(9):763-8 <https://doi.org/10.1016/j.pmrj.2013.03.023> PMID:23528815
- [10]. Kendall F, McCreary E, Provance P 2005 *Muscles: Testing and Function with Posture and Pain*, 5 ed. 23.
- [11]. Bakar Y, Ozdemir OC, Sevim S, Duygu E, Tugral A, Surmeli M 2017 Intra-observer and inter-observer reliability of leg circumference measurement among six observers: a single blinded randomized trial. *J Med Life* 10(3):176-181.
- [12]. Brunnekreef JJ, Van Uden CJ, Van Moorsel S, Kooloos JG 2005 Reliability of videotaped observational gait analysis in patients with orthopedic impairments. *BMC Musculoskelet Disord* 6:17. <https://doi.org/10.1186/1471-2474-6-17> PMID:15774012 PMID:PMC555760
- [13]. Snoeker BA, Zwinderman AH, Lucas C, Lindeboom R 2015 A clinical prediction rule for meniscal tears in primary care: development and internal validation using a multicentre study. *Br J Gen Pract* 65(637): e523-9. <https://doi.org/10.3399/bjgp15X686089> PMID:26212848 PMID:PMC4513740
- [14]. Taradaj J, Halski T, Kucharzewski M. The effect of Neuromuscular electrical stimulation on quadriceps strength and knee function in professional soccer players: Return to sport after ACL reconstruction. *BioMed Res Int.* 2013;1-9. <https://doi.org/10.1155/2013/802534> PMID:24381943 PMID:PMC3870113
- [15]. Eitzen I, Grindem H, Nilstad A, Moksnes H, Risberg MA 2016 Quantifying Quadriceps Muscle Strength in Patients with ACL Injury, Focal Cartilage Lesions, and Degenerative Meniscus Tears: Differences and Clinical Implications. *Orthop J Sports Med* 4(10). <https://doi.org/10.1177/2325967116667717> PMID:27766275 PMID:PMC5063093
- [16]. Hart JM, Kuenze CM, Diduch DR, Ingersoll CD. Quadriceps muscle function after rehabilitation with cryotherapy in patients with anterior cruciate ligament reconstruction. *J Athl Train* 2014;49(6):733-739. <https://doi.org/10.4085/1062-6050-49.3.39> PMID:25299442 PMID:PMC4264644
- [17]. Hart JM, Pietrosimone B, Hertel J, Ingersoll CD. Quadriceps activation following knee injuries: a systematic review. *J Athl Train* 2010;45(1):87-97. <https://doi.org/10.4085/1062-6050-45.1.87> PMID:20064053 PMID:PMC2808760
- [18]. Herrlin S, Hallander M, Wange P, Weidenhielm L, Werner S. Arthroscopic or conservative treatment of degenerative medial meniscal tears: a prospective randomized trial. *Knee Surg Sports Traumatol Arthrosc* 2007;15(4):393-401. <https://doi.org/10.1007/s00167-006-0243-2> PMID:17216272
- [19]. Logerstedt DS, Snyder-Mackler L, Ritter RC, Axe MJ. Orthopedic Section of the American Physical Therapy Association. Knee pain and mobility impairments: meniscal and articular cartilage lesions. *J Orthop Sports Phys Ther* 2010;40(6): A1-A35. <https://doi.org/10.2519/jospt.2010.0304> PMID:20511698 PMID:PMC3204363

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