INTRODUCTION
While an anterior cruciate ligament (ACL) injury is the most common knee injury, with over 200,000 injuries per year in the United States, it typically does not occur in isolation. Increased age and contact injuries have been associated with a higher incidence of concomitant damage, typically meniscal, cartilage, and collateral ligament injuries. Damage to the common fibular nerve occurs in 44% of cases when the injury is in the posterolateral corner of the knee. The impact of traumatic nerve injury on rehabilitation of the knee is not widely discussed in current literature. In addition, optimal timing of ACL reconstruction surgery is not largely agreed upon. Prehabilitation and rehabilitation are provided for patients who undergo knee reconstructive surgery to improve outcomes.

PURPOSE
The purpose of this study is to examine the rehabilitation of a patient status post left ACL and LCL reconstruction when complicated by the COVID-19 pandemic and fibular nerve damage.

CASE DESCRIPTION
- 23-year-old male s/p ACL/LCL reconstruction
- Presented to outpatient physical therapy 1-week post-operation including ACL and LCL reconstruction.
- Upon evaluation, the patient revealed that the initial injury occurred in March of 2020 (3 months prior to surgical intervention). The delay was due to the suspension of elective surgeries due to the COVID-19 pandemic.
- The initial injury occurred during a snowboarding accident and led to ACL/LCL tears, damage to the common fibular nerve, and bruising and damage to his face and left shoulder.
- The concomitant nerve damage and delay in surgical intervention significantly altered his rehabilitation and current functional ability.

PHYSICAL EXAMINATION
- WBAT using bilateral crutches
- Knee immobilizer
- Decreased sensation on anterolateral lower leg
- SLR (+); severe deficit in hamstring flexibility
- Palpation: tenderness over anterior patella and popliteal fossa

INTERVENTIONS
- Treatment was divided into three phases incorporating:
  - Patient Education
  - Manual Therapy
  - Neuromuscular Re-education
  - Therapeutic Activities
  - Modalities

  **Phase I: (Day 7-Week 2)**
  - Interventions:
    - Patient Education (home exercise program, compliance with night splint to reduce severe tightness of plantarflexors, healing timeline)
    - Manual Therapy (Retro-massage for swelling, PROM at knee and ankle, joint mobilizations (grade I-II anterior/posterior glides off tibia on femur and posterior glide of talus on tibia))
    - Therapeutic Exercise (Active assisted range of motion (AA-ROM) knee flexion, long sit calf stretch, ankle 3-5 range of motion (inversion, eversion, dorsiflexion), clamsheil in side-lyings)
    - Neuromuscular Re-education (supine quad sets, short arc quad (SAQ), long arc quad (LAAQ), straight leg raises (SLR) with ankle weight (3 lbs.), single limb stance, marble pick-ups with toes, seated BAPS board)
    - Gait Training (Crutch training)
    - Modalities (NMES (Russian), ice pack (10 mins pre-treatment))

  **Phase II: (Weeks 3-6)**
  - Interventions:
    - Patient Education (updated home exercise program)
    - Manual Therapy (PROM at knee and ankle joints, cupping over incision to promote healing, joint mobilizations (grades III-IV anterior/posterior glides off the tibia on femur and posterior glide of talus on tibia), soft tissue massage for plantarflexors)
    - Therapeutic Exercise (standing calf stretches, standing heel/toe raise (WB through table), ankle 3-way yellow Theraband, leg press (40 lbs.), Theraball squat on wall, clamsheil with red Theraband, SAQ, LAAQ, SLR (18 ankle weight))
    - Therapeutic Activities (lateral step down (4" step), sit to stand from standard chair)
    - Gait Training (6" hurdles forward and lateral)
    - Modalities (ice pack (10 mins post-treatment))

  **Phase III: (Weeks 6+)**
  - Interventions:
    - Patient Education (safe progression for current exercise regimen)
    - Manual Therapy (joint mobilizations (grades III-IV anterior/posterior glides of the tibia on femur and posterior glide of talus on tibia), soft tissue massage for plantarflexors)
    - Therapeutic Exercise (Standing heel/toe raise (bilateral to unilateral), unilateral leg press (20 lbs.), bilateral leg press (40 lbs.), monsterwalks with blue Theraband at ankles, side steps with blue Theraband at ankles, reverse slider lunge)
    - Neuromuscular Re-education (Single leg dead lifts (progressed by adding weight - 8 lbs)
    - Therapeutic Activities (lateral step down (6" step), sit to stand (right foot further out) from low plinth)

OUTCOMES
- Outcomes used included the Lower Extremity Functional Scale (LEFS), Active Range of Motion (AROM), Passive Range of Motion (PROM), and Manual Muscle Testing (MMT).

<table>
<thead>
<tr>
<th>Date</th>
<th>LEFS</th>
<th>Active Range of Motion</th>
<th>Passive Range of Motion</th>
<th>Manual Muscle Testing</th>
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<td>Knee 0-45°</td>
<td>Knee Flexion 2-5</td>
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<td>Ankle 50-65° of plantarflexion</td>
<td>Ankle 0-125°</td>
<td>Ankle Extension 4-5</td>
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<td>Ankle 23-65° of plantarflexion</td>
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</tbody>
</table>

CONCLUSION
Delayed intervention due to COVID-19 and fibular nerve damage greatly impacted the course of treatment and functional outcomes of the individual case presented in this report. These complicating factors not only impacted his function prior to surgery, but also impacted his physical therapy treatment and overall prognosis.

REFERENCES