Name: Injured Patient
Address: 2800 East 2800 North, Metropolis, Utah 84000
Daytime Phone: 801-801-8018
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Algometry

Pressure Threshold

The patient's pressure pain threshold was objectively evaluated using the Tracker Algometry system from JTECH Medical. Pressure pain threshold quantifies the point when force applied at a constant rate becomes painful for the patient. A pressure pain threshold 2 kg (4.4 lb) lower than the uninvolved opposite side is an indicator of soft tissue abnormality related to tenderness. Algometry values falling below the lowest normal cutoff value can also indicate clinically significant tenderness (Fischer, 1998).

			Left			Right	
Test	**Norm**	**Cutoff**	**Max**	**C/O Diff**	**Bilateral Diff**	**Max**	**C/O Diff**
Deltoid	4.8 kg	3.1 kg	2.9 kg	-0.2 kg	-0.4 L	3.3 kg	+0.2 kg
Gluteus medius	6.0 kg	3.7 kg	5.0 kg	+1.3 kg	-1.4 R	3.6 kg	-0.1 kg
Infraspinatus	4.8 kg	3.0 kg	2.2 kg	-0.8 kg	-0.5 L	2.7 kg	-0.3 kg
L4 Paraspinals	5.7 kg	3.8 kg	2.7 kg	-1.1 kg	-0.6 L	3.3 kg	-0.5 kg
Levator scapulae	4.2 kg	2.7 kg	2.7 kg	0.0 kg	-0.2 R	2.5 kg	-0.2 kg
Supraspinatus	4.2 kg	2.8 kg	3.1 kg	+0.3 kg	-0.3 R	2.8 kg	0.0 kg
Teres major	4.0 kg	2.7 kg	2.5 kg	-0.2 kg	-0.2 R	2.3 kg	-0.4 kg
Upper trapezius	4.0 kg	2.0 kg	2.2 kg	+0.2 kg	-0.4 R	1.8 kg	-0.2 kg

Pressure Tolerance

The patient's pressure pain tolerance was objectively evaluated using the Tracker Algometry system from JTECH Medical. Pressure pain tolerance quantifies the amount of pressure the patient can tolerate over muscle and/or bone. According to Fischer (Journal of Manual Medicine, 1990), if measured over the deltoid muscle and tibia, pressure tolerance provide information on pain tolerance (sensitivity) and diffuse muscle tenderness.

			Left			Right	
Test	**Norm**	**Cutoff**	**Max**	**C/O Diff**	**Bilateral Diff**	**Max**	**C/O Diff**
Mid deltoid (PTo)	10.2 kg	7.0 kg	5.8 kg	-1.2 kg	-0.5 R	5.3 kg	-1.7 kg
Mid shin (PTo)	8.9 kg	5.5 kg	6.8 kg	+1.3 kg	-1.3 R	5.5 kg	0.0 kg

Grip Strength Testing

Maximum Grip Test

The patient's grip strength was evaluated with the Tracker computerized grip dynamometer from JTECH Medical to objectively quantify maximum grip strength and identify hand weakness.

Rung 2						
Side	**Maximum**	**Average**	**CV**	**% Diff**	**Norm**	**% of Norm**
Left	77.8 lbs	74.6 lbs	3%	–	57.3 lbs	136%
Right	73.8 lbs	70.1 lbs	4%	-5%	65.8 lbs	112%

Normal values used for comparison were published in: Mathiowetz V. Grip and pinch strength: Normative data for adults. Arch Phys Med Rehabil 1985;66:69-72.

Consistency of the patient's grip strength effort was evaluated using coefficient of variation (CV) with consistency indicated by successive repetitions falling below 15%.

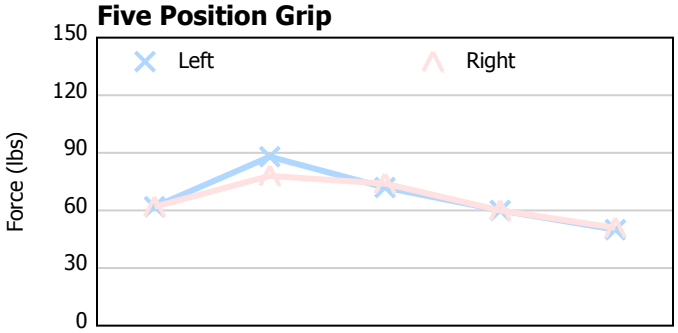
Five Position Grip Test

The patient's grip strength was tested with the Tracker computerized grip dynamometer at all five rung positions.

Position	Left Maximum	Left CV	Right Maximum	Right CV	% Diff
1	62.5 lbs	7%	62.4 lbs	4%	0% R
2	88.1 lbs	8%	78.3 lbs	4%	-11% R
3	72.7 lbs	10%	74.1 lbs	4%	-2% L
4	60.2 lbs	1%	60.8 lbs	2%	-1% L
5	50.6 lbs	2%	51.7 lbs	6%	-2% L

Consistency of the patient's grip strength effort was evaluated using coefficient of variation (CV) with consistency indicated by successive repetitions falling below 15%.

The presence of a bell-shaped curve from the five position grip test results is typically indicative of maximum effort for both injured and uninjured people alike (Stokes, 1983).



Rapid Exchange Grip Test

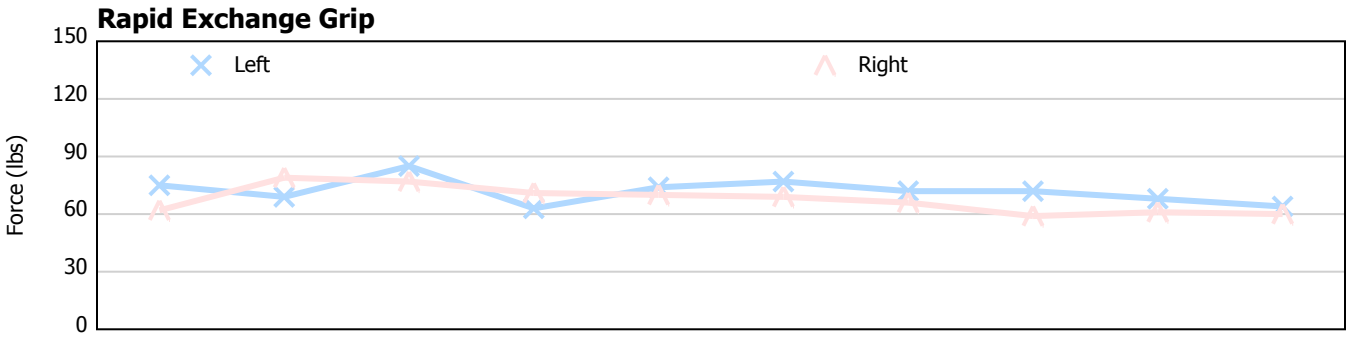
The Rapid Exchange Grip (REG) Test was used to help evaluate the patient's level of effort. Because of the minimized time for muscle recruitment, forces generated during the REG should be comparable to values seen during a maximum grip test performed at the same rung setting on the grip gauge (Hildreth 1989, Stokes 1995, Westbrook 2002).

Rung 2					
Side	**Max**	**Avg**	**CV**	**Cons**	**Diff**
Left	85.3 lbs	71.9 lbs	8%	Yes	–
Right	78.5 lbs	67.4 lbs	9%	Yes	-8%

The cutoff level selected for REG test validity was 100% of the Five position grip maximum. If the patient's REG result exceeds the cutoff level, the patient may not be providing maximum voluntary effort (Hildreth, 1985). Based on the cutoff value for the REG test, the Five position grip test was valid on the left and right side.

Consistency of the patient's grip strength effort was evaluated using coefficient of variation (CV) with consistency

indicated by successive repetitions falling below 15%.



REG - Comparison With Five Position Test

Rung 2			
Side	**Five Position Maximum**	**% of Five Position**	**Valid**
Left	88.1 lbs	97%	Yes
Right	78.3 lbs	100%	Yes

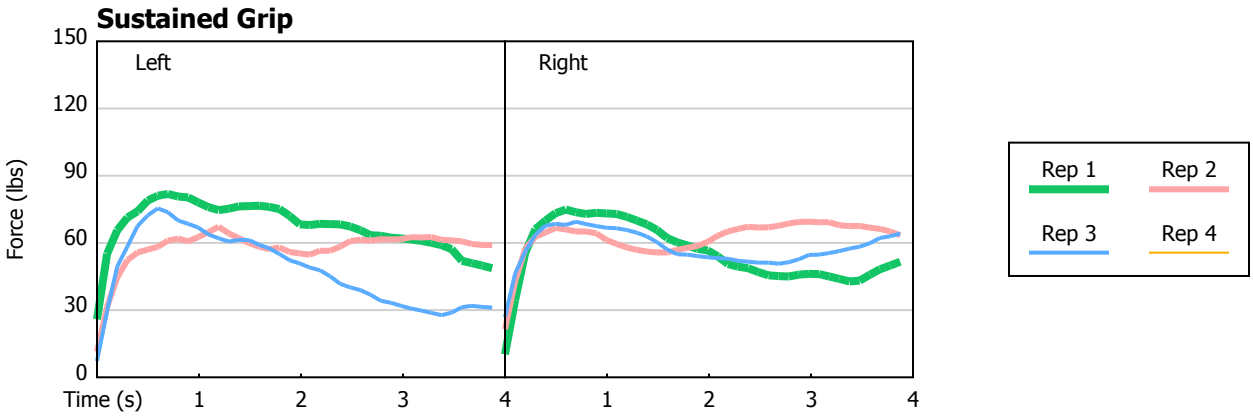
Sustained Grip Test

The patient's maximum grip strength and the ability to sustain a contraction over time were evaluated using the Tracker computerized grip dynamometer from JTECH Medical. The Tracker system documents sustained grip ability by graphing grip strength force over time.

Rung 2				
Side	**Maximum**	**Average**	**CV**	**% Diff**
Left	81.8 lbs	74.8 lbs	8%	–
Right	74.9 lbs	71.2 lbs	3%	-8%

Rung 2	Left		Right	
Rep	**Mean**	**Fatigue**	**Mean**	**Fatigue**
1	67.5 lbs	42%	56.4 lbs	31%
2	60.1 lbs	15%	63.9 lbs	11%
3	47.5 lbs	59%	58.9 lbs	7%
4	–	–	–	–

Consistency of the patient's sustained grip strength effort was evaluated using coefficient of variation (CV) with consistency indicated by successive repetitions falling below 15%.



Muscle Strength Testing

Muscle Tests

The patient was tested using the JTECH Tracker system, a computerized muscle strength evaluation system. When compared to the opposite side, a strength difference greater than 15% is generally recognized as an indication of motor deficit.

	Result		CV		
Lower Extremity Muscle Tests	**Left**	**Right**	**Left**	**Right**	**Difference**
Knee Flexion (Leg Neutral)	17.9 lbs	31.7 lbs	2%	3%	-44% L
Knee Extension	37.5 lbs	48.1 lbs	11%	2%	-22% L
Ankle Plantar Flexion (Knee Flexed)	83.6 lbs	94.7 lbs	6%	1%	-12% L
Foot Dorsiflexion/Inversion	32.3 lbs	58.9 lbs	5%	5%	-45% L
Foot Eversion	32.3 lbs	40.3 lbs	3%	8%	-20% L
Foot Inversion	48.8 lbs	49.5 lbs	18%	4%	-1% L
Great Toe Extension	12.2 lbs	9.3 lbs	6%	2%	-24% R

Knee Flexion (Leg Neutral) - Notes: Reports significant pain in left knee during this knee flexion muscle test.

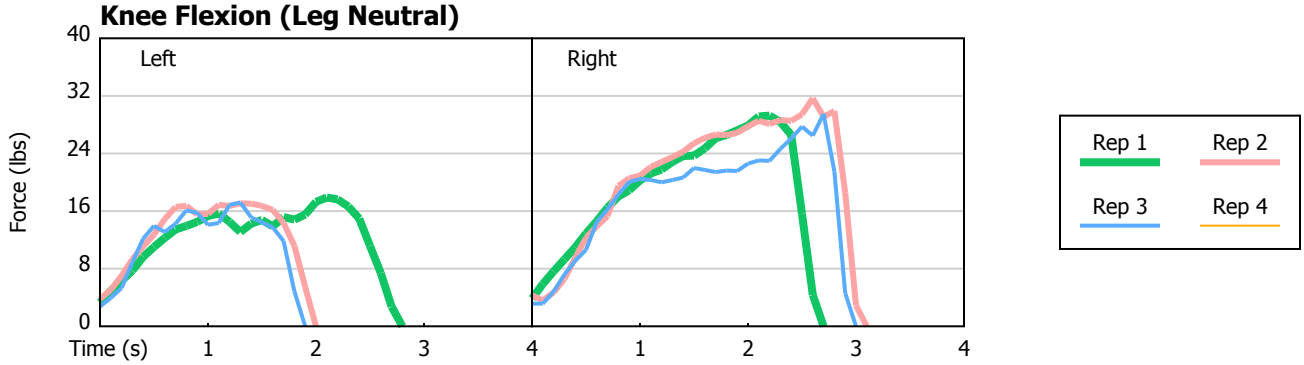
Foot Dorsiflexion/Inversion - Notes: She was unable to complete the three reps of left dorsiflexion because of pain. The second rep caused her to0 cry.

Foot Eversion - Notes: Left test reported to cause pain.

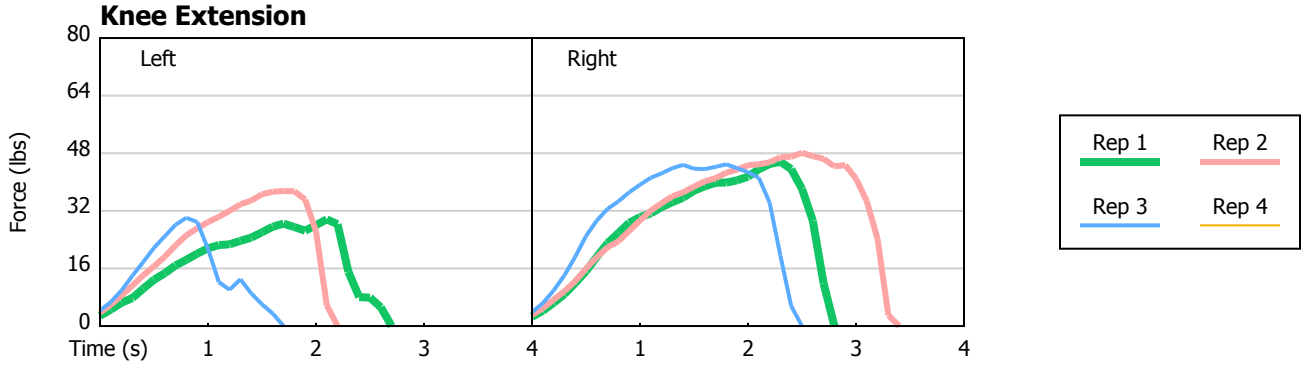
Foot Inversion - Notes: Successive repetitions on left caused pain so that she didn't hold for 3 seconds.

Consistency of the patient's muscle strength was evaluated using coefficient of variation (CV) with consistency indicated by successive repetitions falling below 15%.

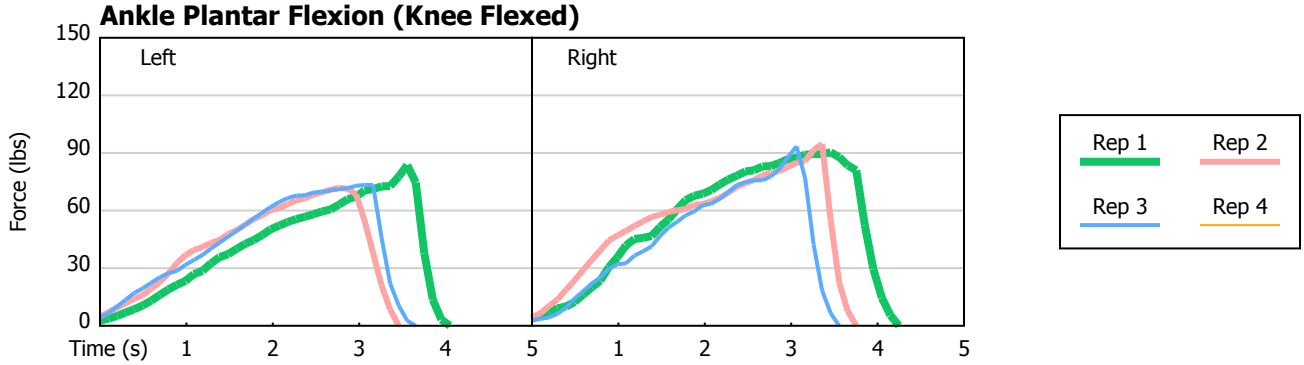
Knee Flexion (Leg Neutral)



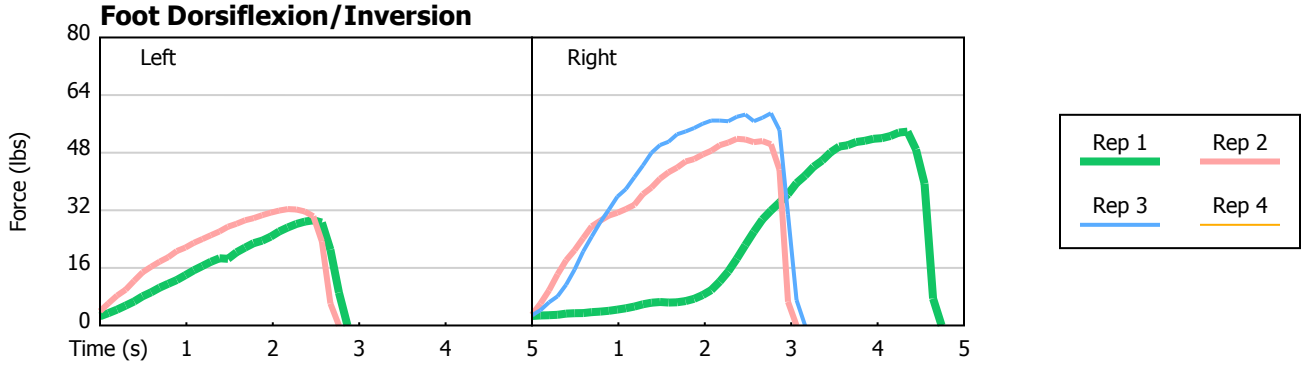
Knee Extension

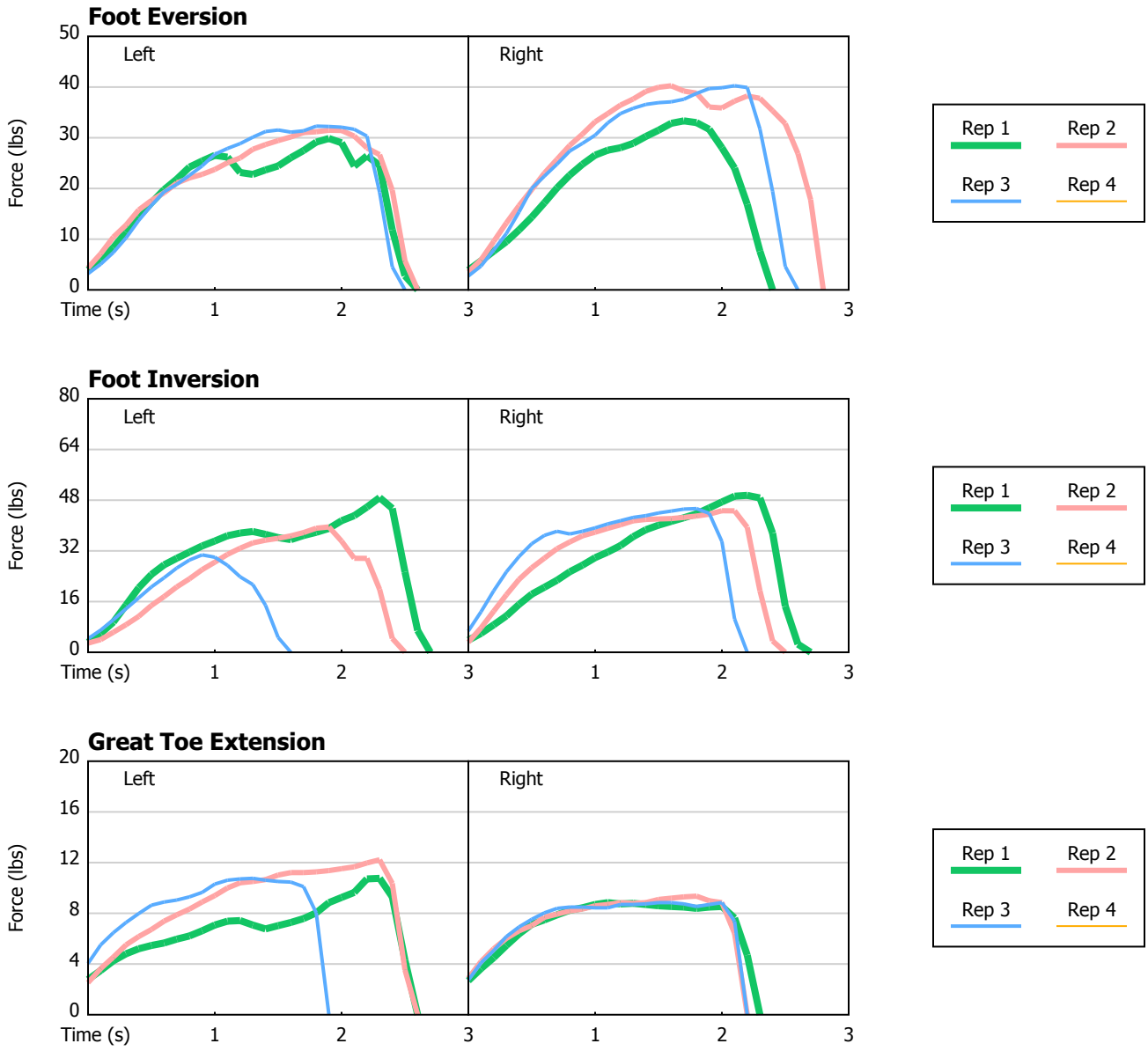


Ankle Plantar Flexion (Knee Flexed)



Foot Dorsiflexion/Inversion





Range of Motion - Goniometry

Lower Extremity Range of Motion

Range of motion (ROM) for the lower extremity joint motions indicated below were evaluated and compared to normative values published by the American Medical Association (AMA) in the Guides to the Evaluation of Permanent Impairment, Fifth Edition.

Lower Extremity ROM - Left Active	Norm	Result	% Norm
Knee Flexion	150°	128°	85%
Knee Extension	0°	10°	–
Ankle Plantar Flexion	40°	52°	130%
Ankle Dorsiflexion	20°	3°	15%

Foot Inversion	30°	33°	110%
Foot Eversion	20°	22°	110%

Lower Extremity ROM - Right Active	Norm	Result	% Norm
Knee Flexion	150°	135°	90%
Knee Extension	0°	2°	–
Ankle Plantar Flexion	40°	56°	140%
Ankle Dorsiflexion	20°	20°	100%
Foot Inversion	30°	47°	157%
Foot Eversion	20°	25°	125%

If you have questions pertaining to this FCE, please contact me at the above listed contact information.
Regards,

X

Patrick Mickelsen, DC, DAAMLP