



### Vastus Medialis Oblique (VMO) Weakness

The vastus medialis oblique muscle (VMO) is responsible for realigning the patella medially during knee extension and preventing lateral subluxation of the patella. Patients with anterior knee pain have been found to have VMO weakness and atrophy which causes an imbalance of the quadriceps components. NMES stimulation helps to re-educate and strengthen the VMO. While using this protocol, it is recommended that the patient be in a closed-chain position with the foot bearing weight on the ground.

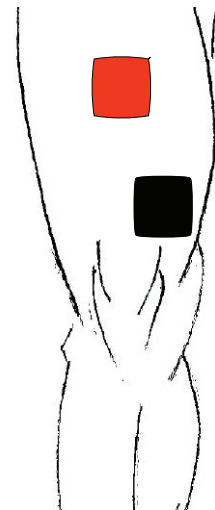
### Suggested Electrode Placements

#### 2-pad placement

Place electrode pads with 1 pad over the VMO muscle and 1 pad on the middle of the thigh

#### 4-pad placement

Place electrode pads with 2 over the medial quadriceps muscles and 2 pads over the lateral quadriceps muscles.



### Suggested Settings

**Pulse rate: 50-65 Hz**

**Pulse width/duration: 250-300  $\mu$ s**

**On/Off times: 1:3 ratio (start with 10 sec ON, 30 sec OFF)**

**Ramp time: 1 sec**

**Amplitude: Maximally tolerated contraction**

**Treatment Time: 15-20 minutes**

**Sessions per day: 3-5 sessions per day (or as needed)**

