How is Pain Amplified?

1. Pain signal from nerves sent to spinal cord
2. Pain signal travels from spinal cord to brain
3. Brain interprets pain signal
4. Abnormal reflex in spinal cord causes a neurovascular response
5. Signal sent to nerves of blood vessels
6. Nerves cause vessels to constrict

The Goal of the Program is to Restore Function
Participation in the AMPS program is designed to return the child to his/her prior functional level at school, in sports, and in leisure activities.

- 80% are functional in 1-2 weeks
- 95% are functional in 1 month
- 75% are pain-free in 1 month

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What is AMPS?

Amplified Musculoskeletal Pain Syndrome (AMPS) is a medical condition in which an individual develops an abnormal pain reflex. This overactive reflex causes constriction of blood vessels which deprives oxygen to muscles, bones and skin causing acid build-up. In turn, a mild pain signal is amplified into a very painful signal. The pain can be constant or intermittent. Often these children will also have allodynia, which is pain in response to a stimulus that normally isn't painful, i.e. light touch.

Causes

The three main causes that may lead to the development of AMPS include:

- Stress
- Injury
- Illness

Typical Features of AMPS

- 80% of children with AMPS are pre-adolescent to adolescent girls.
- Children with AMPS limit their participation in activities to the point where they may quit sports, school, and social activities.
- Children may be accused of faking their pain by friends and family.

Symptoms of AMPS

May include but are not limited to the following:

- Pain in one or multiple limbs, whole body, abdomen, and/or headaches
- Skin temperature changes
- Skin color changes (blue, purple, red)
- Swelling of the affected extremity
- Vascular changes
- Conversions (physical response to emotional stress, i.e. child goes blind after seeing his dog run over by a car)
- Allodynia (pain in response to a stimulus that normally isn't painful, i.e. light touch)

How is AMPS diagnosed?

- Children with AMPS have usually tried and failed traditional outpatient physical or occupational therapy, injections, surgery, medications, chiropractic care, alternative medicine, and other treatments.
- Imaging tests (MRI, CT, X-ray, etc.) are usually negative.
- All other diagnoses have been ruled out.
- There are numerous types of AMPS that are referred to in the following terms:
  - Complex regional pain syndrome (CRPS)
  - Fibromyalgia
  - Myofascial pain syndrome
  - Neuropathic pain
  - Psychogenic pain
  - Reflex Neurovascular Dystrophy (RSD) and Reflex Sympathetic Dystrophy (RSD)

AMPS Treatment Approach

Successful treatment of AMPS involves therapeutic exercises to retrain the nerves and a comprehensive treatment program to restore function. The AMPS program includes:

- Multidisciplinary team approach consisting of physician, nurse, physical therapist, occupational therapist, and mental health professional
- Intense PT/OT outpatient program (7 hours/day, 5 days/week for 4-6 weeks)
- Aquatic and land exercises, desensitization activities, reintegration activities, and self-regulation and relaxation techniques
- Patient/family education and support
- Discontinuation of pain medications prior to entry into the program