

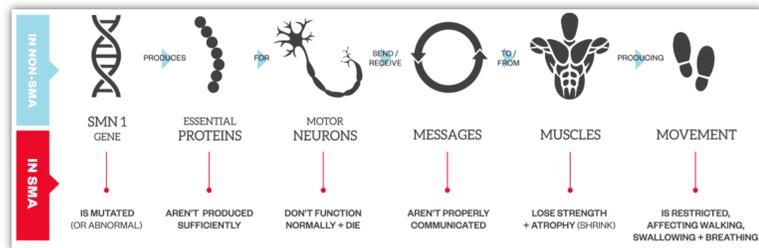
Introduction to SMA

Spinal Muscular Atrophy is a fatal disease caused by the mutation or absence of the gene known as survival motor neuron 1 (SMN1). This mutation causes the degeneration of motor neurons located on the spinal cord, leading to skeletal muscular atrophy (deterioration) caused by the progressive denervation of musculature. In time, the effects of SMA will lead to paralysis.

Type I: Diagnosed at <6 months – Unable to sit unassisted

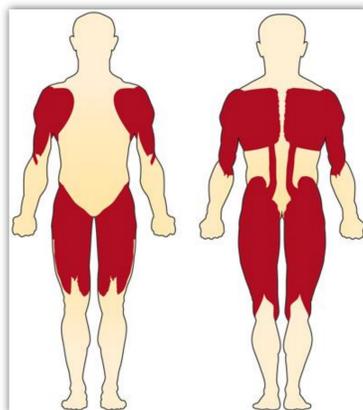
Type II: Diagnosed 6-18 months – Unable to stand

Type III: Diagnosed after 18 months – Able to stand & walk



Muscular Strength & Fitness

SMA constantly and gradually eats away at muscle tissue, breaking it down and wasting it away over time. Since there is no cure for the disease, researchers have searched for ways to counteract the rapid degeneration of musculature, but they have found very little success.



The primary areas of the body affected by Spinal Muscular Atrophy:

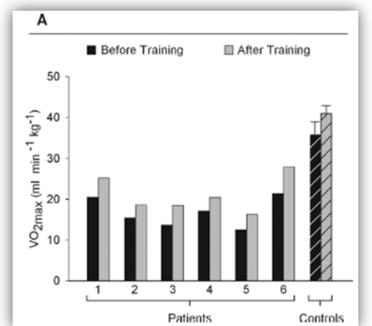
What Are Adaptive Sports?

An adaptive sport is any sport, recreational physical activity, or Olympic event in which the objectives and rules have been tailored to meet the needs of disabled athletes. The majority of these are played in a wheelchair or a power chair and include, but are not limited to: soccer, basketball, tennis, hockey, netball, and rugby. Adaptive sports were created to provide an outlet for physical activity and sportsmanship for those with physical disabilities.



Aerobic Fitness

As the effects of SMA progress, patients tend to have a hard time breathing. This can be due to the denervation & atrophy of the muscles that expand the chest upon inhalation. It can also be attributed to the compression of the chest cavity due to scoliosis (curvature of the spine). The bar graph shown to the right displays the results of a study designed to determine whether aerobic training increases Vo_{2max} (oxidative capacity) in persons with SMA. The 6 participants that completed the study all experienced a significant increase in Vo_{2max} at the conclusion of the 12-week training period. Although Vo_{2max} increased, patients reported no change in levels of fatigue.



Psychosocial

The psychosocial outcomes of participation in adaptive sports are perhaps the most frequently researched. In many cases, all it takes is a simple survey. By getting involved in sports with other disabled athletes, many people find a renewed sense of self-worth and purpose.

“Sport has been a life saver really. It gives me something to focus on.”

“It helps me to relax, socialize, and challenge myself. Most of all, it makes me feel complete.”

“Sport makes me happy and makes me feel good about myself so it generally makes me feel happier in my everyday life and I have less periods of darkness now.”

More Information

SMA is currently the leading genetic cause of infant death. Type I sufferers generally do not live past the age of 2, and those with types II & III have an average life expectancy of 19 years. More research is desperately needed for the sake of those with SMA as well as those with similar illnesses like muscular dystrophy.



www.curesma.org