To Brace or Not to Brace? Improving Function
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Many polio survivors wear braces (orthoses) or have had braces recommended to them. Frequently, the question is raised, “Does the use of a brace accelerate the weakening of the braced muscles?”

To Brace?
Braces are typically recommended to polio survivors to provide stability to a joint(s) and can improve function, decrease pain, and enhance energy conservation. In addition, bracing may allow individuals to increase their levels of physical activity by improving overall muscular strength and cardiovascular endurance, which are both important for health and wellness.

Some persons with a spinal cord injury or reversible peripheral neuropathy, who have increased activity as the result of bracing to immobilize one or more joints, have noted an improvement in strength. This observation demonstrates that bracing does not prevent a muscle from being able to contract. Increasing strength may not be possible with muscles that have lost functional strength due to prior polio. The case study below illustrates the benefits of bracing for a polio survivor.

Polio Survivor Case Study
SJ is a 53-year-old male who works fulltime in a large corporation. SJ acquired polio at age 2 with involvement in his right lower leg. He participated in sports in high school despite a mild limp. He exercised on a regular basis until several years ago when he developed right hip pain when walking long distances and putting on his shoes. He was evaluated at the Coastal Post-Polio Clinic and reported the following:

- Right ankle and hip pain,
- Difficulty with balance when climbing a ladder at work,
- Fatigue after a full day of work, and
- Difficulty sleeping with muscle twitching in the right calf at night.

SJ’s right calf muscle was significantly smaller than the left. His right lower leg was shorter and his foot was one size smaller. In addition, SJ had limited flexibility in his right ankle. A muscle test revealed that he had significant weakness in the right ankle dorsiflexors and plantarflexors.

The dorsiflexors are ankle muscles that lift up the foot as one swings the leg forward when walking. Individuals who report tripping or stumbling when walking have dorsiflexors that are weak.

The plantarflexors are the calf muscles that help push off on the toes when walking forward. When these muscles are weak, individuals report difficulty
From the Editor ...

Thank you for the many positive comments about the organizational changes we've announced. And, please continue to send your comments about the content of Post-Polio Health.

Several support group leaders appreciated the article about Neurontin, because they were concerned about its promotion as the solution for post-polio problems. The alert support group in the Nashville, Tennessee area, led by Nickie Lancaster, had reported to Pfizer, in late 2001, that several members had observed worrisome side effects from Neurontin.

Our lead article addresses "The Question” about bracing that so many of you have asked. Once again, as with exercise, there is no cookie-cutter answer. But, armed with information coupled with an honest assessment of our abilities, each of us can make the right decision.

A summary of the US Social Security Administration’s new ruling on "post-polio sequelae" is on pages 6-7. Polio survivors whose condition prevents them from working have benefited from this program. However, this document is not intended to alert employers of pending problems of employees who had polio, for many polio survivors are able to work. Instead, its purpose is to identify all of the possible medical evidence that will be considered when applying for disability.

Joan L. Headley, MS, Executive Director
Post-Polio Health International

To find a certified orthotist (bracemaker) in your area, log on to www.abcop.org
An ankle-foot orthosis (AFO) is designed to protect, support, and prevent or correct deformity of the foot, ankle, and lower leg complex. AFOs are commonly used to provide support for footdrop or for ankle instability.

SJ was seen 3 months later and reported the following:
- Decreased ankle pain, but hip pain was unchanged due to arthritis and SJ was placed on Celebrex,
- Decreased knee hyperextension when walking,
- Decreased muscle cramping at night due to a decrease in overuse of his calf muscles affected by polio, and
- Decreased fatigue – his new FSS score was 23/36.

SJ was seen one year later being fitted with the AFO.
- He has not lost any strength in the muscles supported by the brace.
- His wife can no longer recognize him at a distance because he no longer walks with a noticeable limp and does not land as hard on his left leg when walking.

**Not to Brace?**

Many polio survivors are fearful that they will lose functional strength when wearing a brace and choose not to even explore the benefits. It is important to understand that bracing is not recommended if the survivor has functional strength. Rather, a brace is recommended when the muscle has deteriorated to less than a functional level resulting in joint instability and overuse of uninvolved muscles and joints.

All muscles show a slow decline in strength with aging. With a normal decline in strength due to natural aging, the decline in function is more dramatic for a muscle affected by polio. This is due to the fact that a muscle affected by polio does not have the same number of nerves and muscle fibers as an unaffected muscle. A muscle affected by polio may appear to have full strength, but it has overcompensated for years.

In theory, immobilization of a joint with bracing may result in a decline in strength in the specific muscles around that joint. But, a decline in strength also occurs with the aging process. Using a brace with a mechanical joint that allows some limited movement may prevent the weakness associated with immobilization. A careful discussion of the components of a brace with a Certified Orthotist (CO) is necessary to develop the most functional design.

**“The Question”**

To brace or not to brace? There is no one correct answer. It can be found within each individual and with recommendations from trusted health professionals knowledgeable about polio and post-polio syndrome. Each polio survivor must examine his/her goals for mobility and participation in activities of daily living and his/her health and wellness. The goals must reflect individual concerns and be cost-effective. Discussion about the pros and cons of bracing is a hallmark of a good team approach when managing post-polio syndrome.

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