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ATP Series

UNDERSTANDING SCOLIOSIS

This Common Condition Among Wheelchair Users Has an Uncommon Ability to Impact Fit & Function

By Laurie Watanabe | Oct 01, 2015



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By definition, practically every primary condition you'll encounter as a seating & wheeled mobility clinician or ATP will be statistically rare, no matter how familiar it seems to you and your colleagues. Visit the National Organization for Rare Disorders (NORD) database (rarediseases.org), and you'll find among its listings ALS, cerebral palsy, multiple sclerosis, various forms of muscular dystrophy, spina bifida and spinal muscular atrophy.

But one of the secondary conditions you'll encounter in your clients is so common it doesn't make the NORD list. Scoliosis is, in fact, commonly seen not only among your wheelchair-using

clients, but also among the able bodied, some of whom might not even realize they have it, and may do little or nothing to treat it.

For the wheelchair user, however, scoliosis can be a condition that increasingly interferes with their lives, putting overall functionality at risk and negatively impacting other bodily functions.

THE GENERAL INCIDENCE OF SCOLIOSIS

Jay Doherty, OTR, ATP/SMS, senior clinical education manager, Eastern U.S., Quantum Rehab, calls scoliosis "absolutely something that we often see with seating & positioning."

He adds, "Scoliosis is basically a curvature of the spine. Typically when we're talking about scoliosis, we're talking about a lateral curvature of the spine, but scoliosis can also have a rotary component to it with the spine. So the spine can be rotated."

Generally speaking, scoliosis affects two to three percent of the population, according to a 2007 report from the American Association of Neurological Surgeons

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according to a 2007 report from the American Association of Neurological Surgeons (AANS). That added up to between six and nine million people in the United States, though only a small fraction of those people were actually treated for their scoliosis via such interventions as braces or surgery.

The AANS report added that the most common age for scoliosis onset was from 10 to 15 years of age, and that scoliosis occurred equally in boys and girls, though girls were eight times more likely to require medical intervention.

But those general statistics and rates of required intervention don't hold true for the clients you see every day.

SCOLIOSIS & THE WHEELCHAIR USER

Scoliosis — its causes, severity and progression — can be a very different story for people who use wheelchairs.

“By the time a patient is dependent on a wheelchair and a seating system for support, they already have some muscle imbalance,” says Cindi Petito, OTR/L, ATP, CAPS, president of Seating Solutions in Florida.

“Many of the folks we're seating are actually folks with muscle imbalance or weakness,” Doherty says, “and gravity is constantly working on their bodies. So because of that, scoliosis tends to be fairly prevalent over time.”

So while scoliosis usually isn't the reason your client is in his/her wheelchair, it is likely a side effect of the primary mobility-related condition.

“Scoliosis in my experience has always been a secondary complication to a primary problem,” Doherty says. “So whether it's a progressive neurological condition, muscle imbalance or tonal issues like you have with cerebral palsy and traumatic brain injury, it's typically a secondary complication of the original primary diagnosis. It can range from someone with a spinal cord injury that doesn't have tone and muscle function below a certain level, but has scoliosis because of gravity, all the way to somebody who has tone, and the muscle tone is actually causing the scoliosis to progress.”

DIVERGENT PATHS

From there, scoliosis can diverge in how it presents and progresses, and many different factors can impact severity.

“The folks we work with are dealing with a disability or maybe even a disease process, and because of the weakness and the changes they have, [scoliosis] manifests itself in so many different ways,” Doherty says. “Where the scoliosis affects the spine is quite often different with each person. It could be a C curve throughout the spine. A lot of times we see an S curve, where you have a curvature in the lower spine — but then our natural tendency is to right ourselves to a more straight position, and to right yourself when you have a curvature, you create a curvature in the cervical region in the opposite direction.”

As with most mobility-related conditions that seating specialists will see, scoliosis can look very different from client to client, even if clients have the same or similar primary diagnoses.

“You can have a man and a woman with similar tonal issues,” Doherty says as an example. “They're both probably going to develop a curvature over time, although



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they may also be impacted by the treatment that's being followed, by the doctor or the therapist. So one person might have more severe scoliosis than another because maybe it's not being addressed as well."

SCOLIOSIS INTERVENTIONS

Regardless of what caused the scoliosis, intervention is critical because curvatures of the spine can interfere with so many other bodily systems.

"A more severe case of scoliosis, where increased curvature, pain and disfigurement result, can cause difficulties walking and breathing," Petito says. "If you are not properly supported you will likely develop postural deformities. The choice of seating system to support your body shape is absolutely critical in preventing the onset or progression of scoliosis."

As scoliosis progresses, Doherty notes, it can impact digestion, respiration and circulation, in addition to mobility and the musculoskeletal system.

"Somebody could come in and they're having trouble with breathing, and maybe they're prone to chronic bronchitis or something along those lines," he notes. "The medical team may need to look at whether the scoliosis is impacting their respiratory capacity — is that part of the issue?"

Scoliosis can even raise the risk of skin breakdown for wheelchair users.

"Scoliosis can be a precursor to a pressure ulcer," Doherty says. "You've got a curvature of the spine; that often transfers down into the pelvis position, so a rotational scoliosis may cause problems on one side of the rib cage over the other."

Scoliosis interventions can range from drugs to orthotics — and as part of the seating evaluation, seating specialists should ask which if any interventions are being used, since they can impact seating equipment choices.

"They could be on a medication to manage tone," Doherty says. "That's going to have an impact on the scoliosis. When you've got younger kids and teenagers, they may have a TLSO — a thoracic lumbar sacral orthotic or a body jacket, as a lot of folks call it. You have to decide: Are they going to be wearing it in the seating system or not? Because the seating system often has to be adjusted for one or the other. Where I used to work, we would do a quick review of the medical charts and say, 'Oh, they're wearing a body jacket. We need to let Mom and Dad know that they need to bring the body jacket.'

"The seating system has to be adjusted with the body jacket or without it. It's very difficult to fit the seating system correctly for both because that body jacket takes up some space between the laterals and the person. And your approach is very different. Without it, you're going to be doing more correcting through the lateral trunk supports; with the body jacket, you're going to be providing more balance than correction, because the body jacket itself is then providing the correction."

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