

PedsCases Podcast Scripts

This is a text version of a podcast from PedsCases.com on “**Pediatric Rehabilitation Part 1: Introduction to Pediatric Rehabilitation.**” These podcasts are designed to give medical students an overview of key topics in pediatrics. The audio versions are accessible on iTunes or at www.pedcases.com/podcasts.

Pediatric Rehabilitation Part 1: Introduction to Pediatric Rehabilitation

Developed by Andy Le and Dr. Matthew Prowse for PedsCases.com.
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Introduction

Hello, and welcome to PedsCases podcasts. My name is Andy Le and I am a medical student at the University of Alberta. This podcast was developed in conjunction with Dr. Matthew Prowse, the Program Director of the Division of Physical Medicine and Rehabilitation at the University of Alberta. Today, we will be discussing pediatric rehabilitation and providing an introduction to Physiatry and rehabilitation principles. This will be the first podcast of a three part series. The second podcast will provide an approach to the pediatric rehabilitation history and physical examination, with focus on pediatric specific components. The third podcast will provide an approach to assessment of spasticity in a pediatric patient.

After listening to this podcast, the learner will be able to :

1. Describe the role of a physiatrist
2. Compare and contrast the terms impairment, disability and handicap
3. Assess activities of daily living and instrumental activities of daily living
4. Understand the importance of a functional assessment
5. Recognize components specific to pediatric rehabilitation

We will provide a general introduction to Physiatry and then move on to discussing more pediatric-specific topics.

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First, let's start with a case. Jeremy is a 11 year old boy with cerebral palsy. Let's walk through Jeremy's typical day. Due to his spastic diplegia, he has spasticity in his lower extremities that impairs the use of these limbs. He is, however, still able to walk and has full use of his upper extremities. In the morning, he can get out of bed himself and walks to the washroom without the use of any gait aids to brush his teeth. He is independent in toileting, but sometimes has difficulties due to his spasticity. He can dress his upper body easily, but he requires extra time dressing his lower body. Jeremy makes his bed and then packs up his school bag. Jeremy then heads downstairs, being sure to use the hand rails, where he prepares and eats cereal for breakfast without any assistance. Before heading out to catch the public school bus, Jeremy remembers to grab his forearm crutches that he uses outside of the house to walk longer distances. At school, Jeremy has trouble participating in soccer at recess due to the spasticity in his legs, but he loves to play basketball with friends. He participates well in his classes, though he sometimes takes a bit longer to understand certain concepts compared to his peers. When he returns from school, he has a bit of time to play video games with his brother before having to finish his homework. After dinner, Jeremy takes a shower independently before going to bed. We will return to Jeremy's day to illustrate a number of concepts in rehabilitation medicine.

Introduction to Physiatry

Otherwise known as Physical Medicine and Rehabilitation, or PM&R, Physiatry is a field of medicine that focuses on treatment of function. Broadly, it can be divided into two main categories – neurological concerns and musculoskeletal concerns – though there is often overlap. Examples of major areas in Physiatry include, but are not limited to, spinal cord injury, stroke, brain injury, amputee rehabilitation, neuromuscular disorders, pain, sports medicine, and pediatric rehabilitation, which will encompass all of these areas in the pediatric population.

Physiatrists lead an interdisciplinary team of health care professionals to address each patient's medical and functional concerns. These professionals include, but are not limited to, physical therapists, occupational therapists, and nurses. Physiatrists are commonly consulted by other physicians, such as family physicians, pediatricians, neurologists, orthopedic surgeons, and many more. They can work in hospitals or in the community in an outpatient setting.

Physiatrists typically deal with chronic functional concerns and typically do not see patients after acute injuries or illnesses. Referrals to physiatrists are often best made once any acute issues have been resolved and the goal is to help the patient achieve the highest level of functioning as possible.

Rehabilitation Principles

In order to better understand the role of Physiatry, let's discuss the meaning of function in a medical context. The World Health Organization has published the International Classification of Functioning, Disability and Health (or ICF for short). This classification provides a framework and is the current international standard for conceptualizing health and disability. It can be found on the WHO website for those interested in learning more, but here are a few key concepts.

The ICF describes function as occurring at three levels:

1. At the level of the body part or system. Something that affects this level is termed an impairment, which involves problems in body function and/or structure, such as significant deviation or loss.
2. At the level of the person and their activities. An activity is defined as the execution of a task or action. Something that affects this level is termed a disability or activity limitation.
3. At the level of the person in society and their ability to participate. Participation is defined as involvement in a life situation. Something that affects this level is termed a handicap or participation restriction.

Function results from an interaction between the health condition of an individual, environmental factors, and personal factors. Environmental and personal factors can affect function either positively or negatively. Physiatry therefore focuses on measuring health outcomes at each of these three levels, identifying potential areas of improvement, and providing interventions with the goal of maintaining or improving function at one or more of these functional levels.

In order to differentiate between an impairment, activity limitation, and participation restriction, it can help to think of a cascade of events. For example, a patient with a recent brain injury may have a visual impairment. This visual impairment can lead to difficulty reading and writing, examples of activity limitations. And these activity limitations restrict their ability to participate in society as a student. Thus, in this example, an impairment leads to an activity limitation, resulting in a participation restriction. It is important to note, though, that not all situations will be similar to this cascade – for example, there are scenarios where a patient may have an impairment without an activity limitation. This idea of a cascade is simply meant to provide an approach to how you can think about these three levels of functioning.

Next, let's discuss the concepts of activities of daily living (ADLs), and instrumental activities of daily living (iADLs). ADLs are daily self-care activities including mobilizing, eating, toileting, bathing and dressing. iADLs are activities that allow an individual to live independently, including preparing meals, getting to school, taking prescribed

medications, etc. Assessment of how a patient completes their ADLs and iADLs is critical in assessing function.

A detailed functional history helps guide the physical examination and development of a treatment plan, and thus is the cornerstone to rehabilitation.

A potential approach to a functional history is organizing your questions based on what their normal day looks like. You can start by asking about when they first wake up in the morning, whether they are able to sit up in bed themselves or if they require assistance. Then moving on to assessing their level of independence in getting dressed, mobilizing to the washroom, toileting themselves, bathing, brushing their teeth, and so forth, until you are able to ask about all areas of functioning. Another approach involves asking around the six domains in the Functional Independence Measure, or FIM. These include self-care, bowel and bladder control, locomotion, transfers, communication, and social cognition. Self-care can be divided into six further categories including upper body dressing, lower body dressing, feeding, grooming, bathing, and toileting. As well, the WeeFIM is a version developed in particular for children between the ages of six months to seven years. You can refer to the link provided in the references for further information on the FIM. An important consideration for pediatrics is that the functional history and the types of questions that are appropriate to ask will depend on the patient's developmental level – obviously we would not expect a 2 month old baby to sit independently. This concept will be expanded on in the second podcast of this series.

Pediatric Specific Considerations

When working with pediatric patients, special considerations should be kept in mind. Pediatric patients are often affected by conditions that impair the functioning of their neuromusculoskeletal systems before they have fully matured. The focus therefore is usually on a mixture of “habilitation”, or the acquisition of new skills and abilities despite these impairments, and rehabilitation, which applies to the recovery of previously established abilities. The interplay between the disease process and the natural processes of growth and development may lead to additional challenges. For example, the inability to make informed decisions is to be expected in a young child but if this impairment persists into adolescence and adulthood it will significantly impair that individual's ability to function independently.

In addition, what you can expect from a pediatric patient during your assessment will vary depending on the child's developmental level. Knowing developmental milestones will give you a rough idea as to what to expect from pediatric patients in the examination and will therefore allow you to tailor your approach. Developmental milestones are also crucial to identify when children are deviating from the expected course of development, which can be helpful diagnostically.

It is important to remember that children are not simply “little adults” and that every child is unique. Assessing a child’s functional status will be different than an adult because their underlying abilities and required functions will be different. Consequently, goal-setting for their rehabilitation and the methods by which to achieve those goals will also differ. This will be expanded on in future podcasts.

Case

Let’s return to our case. Due to his cerebral palsy, Jeremy has difficulty moving his legs, which is an impairment for him. Although this has limited him in certain self-care activities, such as getting dressed, he is still independent in other ADLs and iADLs like ambulating, toileting, hygiene, eating, and preparing food. It appears his impairment has prevented him being able to run and play soccer at recess, resulting in an activity limitation and participation restriction respectively. On the other hand, he is not restricted from playing basketball as he and his friends have come up with a way to adapt this activity that is consistent with Jeremy’s abilities. He is still able to go to school and function in society as a student and brother.

As you can see, quite a bit of information can be obtained about Jeremy’s function by learning what his typical day looks like. Going from waking up in the morning to getting tucked in at night, we can see that Jeremy is independent in various areas of functioning, but also requires some help in other areas.

Conclusion

This brings us to the end of this PedsCases podcast on general rehabilitation principles and pediatric rehabilitation. Before we leave, let’s review some take-home points:

1. Physiatrists play a unique role in the multidisciplinary management of a patient’s functional health. They have a broad expertise in both neurological and musculoskeletal health.
2. Function can be affected at three levels: an impairment affects a body part or system, an activity limitation affects a person’s ability to execute a task or action, and a participation restriction affects an individual’s ability to participate in society.
3. A good approach to a functional history is to ask a patient to describe their typical day including ADLs and iADLs
4. Pediatric physiatry includes a mix of habilitation of new skills and rehabilitation of lost skills, as well as consideration of developmental status

Thank you for listening!

References

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[https://www.physio-pedia.com/Functional_Independence_Measure_\(FIM\)](https://www.physio-pedia.com/Functional_Independence_Measure_(FIM))