

Examining and Evaluating Children with Disabilities

CHAPTER 4

To decide what kind of help, if any, a child with disabilities may need, first we need to learn as much as we can about the child. Although we may be concerned about her difficulties, we must always try to **look at the whole child**. Remember that:

A child's abilities are more important than her disabilities.

The aim of rehabilitation is to help the child to function better at home and in the community. So when you examine a child, try to relate all your observations to what the child can do, cannot do, and might be able to do.

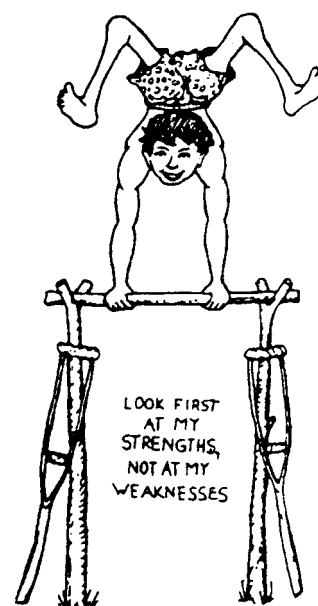
What a child is and does depends partly on other persons. So we must also look at the child's abilities and difficulties in relation to her home, her family, and her village or neighborhood.

To evaluate a child's needs, try to answer these questions:

- What can the child do and not do? How does this compare with other children the same age in your community?
- What disabilities does the child have? How and when did they begin? Are they getting better, worse, or are they the same?
- In what ways are the child's body, mind, senses, or behavior affected? How does each specific disability affect what she does?
- What secondary disabilities are developing? (Disabilities that result after and because of the original disability.)
- What is the home situation like? What are the resources and limitations within the family and community that may increase or hold back the child's possibilities?
- In what way has the child adjusted to her disability, or learned to manage?

To find the answers to these questions, a health or rehabilitation worker needs to do 3 things:

1. **Observe the child** carefully—including her interaction with the family and with other persons.
2. **Take a history.** Ask the parents and child (if old enough) for all information they can provide. Obtain medical records if possible.
3. **Examine the child** to find out how well and in what way different parts of her body and mind work, how developed they are, and how much they affect her strengths and weaknesses.



Observation of the child can begin from the first moment the health worker or rehabilitation worker sees the child and her family. It can begin in the waiting area of a village center, the home, or the street, and should continue through the history-taking, examination, and follow-up visits. Therefore, we do not discuss ‘observation’ separately, but include it with these other areas.

It is usually best to ask questions before beginning to examine the child—so that we have a better idea what to look for. Therefore, we will discuss history-taking and then examination. But first a word about keeping records.

RECORD KEEPING

For a village rehabilitation worker who helps many children, writing notes or records can be important for following their progress. Also, parents of a child with disabilities may find that keeping simple records gives them a better sense of how their child is doing.

Six sample RECORD SHEETS are on pages 37 to 41, 50, 292, and 293. You can use these as a guide for getting and recording basic information. But you will want to follow with more detailed questions and examination, depending on what you find.

Sample RECORD SHEETS included in this book	RECORD SHEET number	page
Child history	1	37 and 38
Physical examination	2	39
Tests of nervous system	3	40
Factors affecting child development	4	41
Evaluation of progress	5	50
Child development chart	6	292 and 293

Sheets 1 and 2 will be useful for most children with disabilities. Sheets 3, 4, and 6 are for children who may have cognitive delay. Sheet 5 is a simple form for evaluating the progress of children 5 years old or older.

HISTORY-TAKING

On pages 37 and 38 you will find a record sheet for taking a child’s history. You can use it as a guide for the kinds of questions it is important to ask. (Of course, some of the questions will apply more to some children than others, so ask only where the information might be helpful.)

When asking questions, we rehabilitation workers must always remember that parents and family are the only real experts on their child. They know what she can and cannot do, what she likes and does not like, in what ways she manages well, and where she has difficulties.

However, sometimes part of the parents’ knowledge is hidden. They may not have put all the pieces of knowledge together to form a clear picture of the child’s needs and possibilities. The suggestions in this chapter, and the questions on the RECORD SHEETS, may help both rehabilitation workers and parents to form a clearer picture of their child’s needs and possibilities.









Rehabilitation workers and parents can work together to figure out the child’s needs.

EXAMINING CHILDREN WITH DISABILITIES

After finding out what we can by asking questions, our next step is to examine the child. In as friendly a way as possible, we carefully observe or test what parts of the child work well, what parts cause difficulty, and how this affects the child's ability to do things and respond to the world around him.

CAUTION: Although we sometimes examine separately different aspects of the child's body and mind, our main purpose is **to find out how well the child's body and mind work together as a whole: what can the child do and not do, and why?** This information helps us decide how to help the child to do things better.

In examination of a child with disabilities, we may check on many things:

- **The senses:** How well does the child see?  hear?  feel? 
- **Movement:** How well does the child move or control her movements? 
- **Form and structure:** How typical or injured are different parts of the body: the joints,  the backbone,  and skin? 
- **Mind, brain, and nervous system:** How much does the child understand? How well do different parts of the body work together? For example, balance or eye-to-hand coordination. 
- **Developmental level:** How well does the child do things, compared to other local children her age?
- **Pain:** Is the child in pain from their disability? How intense is it? Does it happen only in specific situations? See the box below for ways to look for pain in children, and medicines that can help.

Helping Children with Pain

Some types of pain are caused by something easy to see and understand. Others, such as joint pain, are caused by things you cannot see. Because children are not always able to tell us about pain, we have to watch for signs. Common signs of pain in children include when a child:

- cries or moans when touched or moved, or without an obvious reason
- is upset or unable to sleep
- has a fast heartbeat or breathing rate
- holds a part of the body or does not move a part of the body
- keeps to themselves, is sad, or is very quiet
- refuses to eat or play

For information on medicines that help with pain in children, see p. 134.

In addition, a **complete** physical examination would include checking the health of **systems inside the body**. Although this part of the examination, if needed, is usually done by health workers, rehabilitation workers need to know that with certain disabilities inner body systems may also be affected. Depending on the disability, these may include:



the
breathing
system
(respiratory
system)



the body's
cleaning
system
(urinary
tract)



the heart
and blood
system
(circulation
system)



the food
processing
system
(digestive
system)

Rehabilitation workers need to work in close cooperation with health workers.

A detailed examination of all a child's parts and functions could take hours or days. Fortunately, in most children this is not necessary. Instead, start by observing the child in a general way. Based on the questions you have already asked and your general observations, try to find anything that seems unusual or not quite right. Then examine in detail any body parts or functions that might relate to the disability.

Part of the art of examining a child is KNOWING WHEN TO STOP. It is important to check everything that might help us understand the child's needs. But it is equally important to win the child's confidence and friendship. Too much examining and testing can push any child to the point of fear and anger. Some children reach their limit long before others. So we must learn how much each child can take—and try to examine the child in ways that she accepts.

Some children require a much more complete examination than others. For example:

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Juan lost one hand in an accident 2 years ago, but seems otherwise unaffected. Probably he will need little or no physical examination other than to see how he uses his arms, stump, and hand. You will also want to check how much he can do with his other hand, with only his stump, and when using both together.



The Physical Examination Form (RECORD SHEET 2 on p. 39) is probably the only examination form you need to fill out.

However, it would be wise to learn about how Juan's family and others treat him now, and how he feels about himself and his ability to do things. Does he keep his stump hidden when he is with strangers? With family members? What are his hopes and fears? You can write this information on the back of the form.

Ana is 2 years old and still does not sit by herself. She has uncontrolled movements. She does not play with toys or respond much to her parents.

You will need to check:



- how well she sees and hears.
- how strong, weak, or stiff different parts of her body are.
- in what ways her development is delayed (what she can do and not do).
- how much she understands.
- signs of brain injury, and how severe.
- her sense of balance and position.
- what positioning or support gives her better control and function.

It may take weeks or months of repeated examining and testing to figure out all of Ana's difficulties, and how to best help her to function better. It could be a mistake to try to do all the needed examining at one time.

To record all the useful information on a child like Ana, you will find RECORD SHEETS 1, 2, 3, 4, and 6 helpful.

Examining techniques: Winning the child's confidence

Depending on how you go about it, the physical examination can help you become a child's friend or turn you into his enemy. Here are a few suggestions:

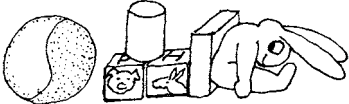
- **Dress as one of the people.** White uniforms often scare a child—especially if at some time he was injected by a nurse or doctor.
- Before starting the examination, **take an interest in the child as a person.** Speak to him in a gentle, friendly way. Help him relax. Touch him in ways that show you are a friend.



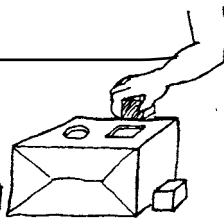
- **Approach the child from the same height,** not from above. (Try to have your head at the same level as his.)
- Start the examination with the child sitting or lying **on mother's lap, on the floor, or wherever he feels most safe and comfortable.**
- If the child seems nervous about a stranger touching or examining her, **have the family do as much of it for you as possible.** This shows that you respect and want to include them. And they may learn more.

- Make the waiting area and place where you do the examining as pleasant and as much like home as you can. Have lots of toys, from very simple to complex, where the children can choose and play with them. By watching if, how, for how long, with what, and with whom a child plays, you can learn a lot about what a child can and cannot do, his level of physical and mental development, the types of challenges he has, and the ways he has (or has not yet) adapted to them.





Watching how a child plays—by herself, with people, and with toys—is an essential part of evaluating the child.




- Try to **make the examination interesting and fun** for the child. Turn it into a game whenever possible. For example:

When you want to test a child's eye-to-hand coordination (for possible balance difficulty or brain injury) you might make a game out of having the child touch the nose of a doll. Or have her turn on a flashlight (torch) by pushing its button.

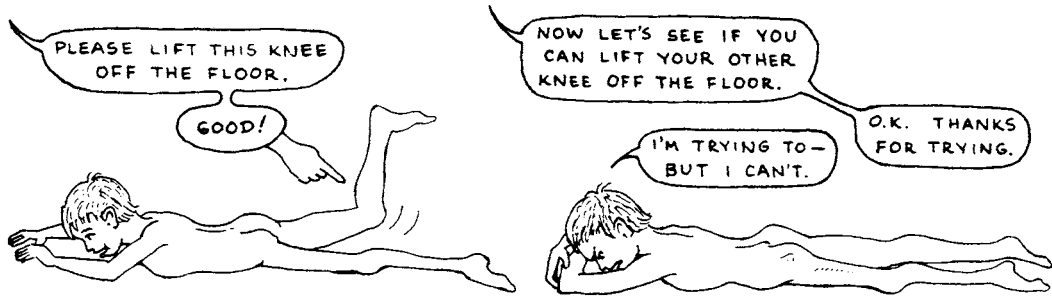


Also, when a child begins to get restless, stop examining for a while and play with him, or let him rest.



It is best to examine a child when he is well-rested, well-fed, and in a good mood—and when you are, too. (We know this will not always be possible.)

- When a child is weaker or has less control on one side than the other, **first test the stronger side, and then the weaker side.**



By testing the stronger side first, you start by giving the child encouragement with what he can do well. Also, if the child does not move the weaker side, you will know it is because he cannot, and not because he does not understand or is not trying.

- As you examine the child, **give her lots of praise and encouragement.** When she tries to do something for you and cannot, praise her warmly for trying.

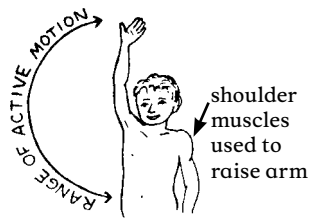
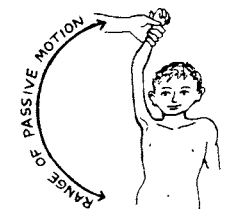
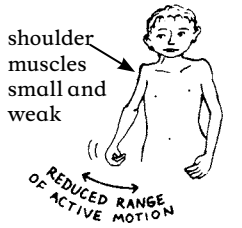
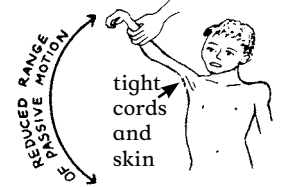
Ask her to **do things she can do well and not just the things she finds difficult**, so that she gains a stronger sense of success.



TESTING RANGE OF MOTION OF JOINTS AND STRENGTH OF MUSCLES

Children who have disabilities that affect how they move often have some muscles that are weak or paralyzed. As a result, they often do not move parts of their bodies as much as children who do not have disabilities.





Loss of strength and active movement may in time lead to a stiffening of joints or shortening of muscles (contractures, see Chapter 8). As a result, the affected part can no longer be moved through its complete range of motion.

ACTIVE MOVEMENT	PASSIVE MOVEMENT
<p>The shoulder muscles can usually raise the arm until it is straight up.</p>	<p>At first the paralyzed arm can be lifted straight up with help. This is called PASSIVE MOTION.</p>
	
<p>Lifting the arm like this with the arm's own muscles is called ACTIVE MOTION.</p>	<p>Unless the full range of motion is kept through daily exercises, the passive range of motion will steadily become less and less.</p>
<p>When the shoulder muscles are paralyzed, the child can no longer actively lift his arm.</p> 	 <p>Now the arm cannot be raised straight up, even with help.</p>

In the physical examination of a child with any weakness or paralysis of muscles, or joint pain, or scarring from injuries or burns, it is a good idea to test and record both range of motion and muscle strength of all parts of the body that might have contractures or be affected. There are 2 reasons for this:

- Knowing which parts of the body have contractures or are weak, and how much, can help us to understand why a child moves or limps as she does. This helps us to decide what activities, exercises, braces, or other measures may be useful.
- Keeping accurate records of changes in muscle strength and range of motion can help tell us if certain problems are getting better or worse. Regular testing therefore helps us evaluate how well exercises, braces, casts, or other measures are working, and whether the child's condition is improving, and how quickly.

Before testing range of motion and muscle strength in children with disabilities, it helps to first test children without disabilities of similar ages, to know what their usual ranges of motion and muscle strengths are. Age matters because babies are usually weaker and have much more flexible joints than older children. For example:

			
<p>A baby's back and hips bend so much he can lie across his straight legs.</p>	<p>A young child bends less but can usually touch his toes with his legs straight.</p>	<p>Around 11 to 14 it is harder to touch toes. His legs grow faster and become longer than his upper body.</p>	<p>Later, upper body growth catches up with legs. He can again touch toes more easily.</p>

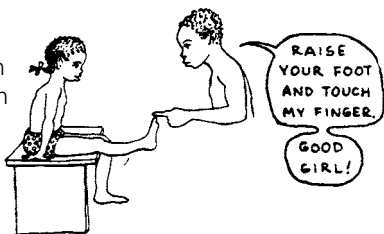
In different children (and sometimes in the same child) you may need to check range of motion and strength in the hips, knees, ankles, feet, toes, shoulders, elbows, wrists, hands, fingers, back, shoulder blades, neck, and jaw. Some joints have 6 or more movements to test: bending, straightening, opening, closing, twisting in, and twisting out. See, for example, the different hip movements (range-of-motion exercises) on p. 380 in Chapter 42.

To test both range of motion and strength, first check range of motion. Then you will know that when a child cannot straighten a joint, it is not just because of weakness.

Range-of-motion testing examples

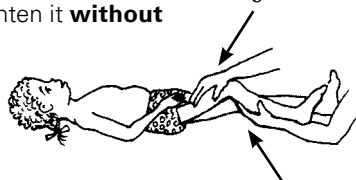
Knee

1. Ask the child to straighten it as much as she can.

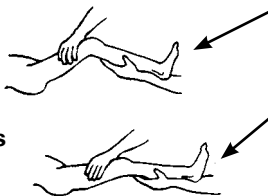


2. If she cannot straighten it all the way, gently see how far you can straighten it **without forcing.**

With your hands, support the joint on each side as you straighten it.



3. If at first the joint will not straighten, keep trying with **gentle continuous pressure** for 2 or 3 minutes.

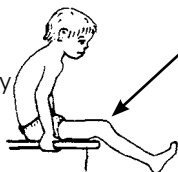


If it still does not straighten, the range of motion is reduced. This is usually because of a **contracture** (see Chapter 8).

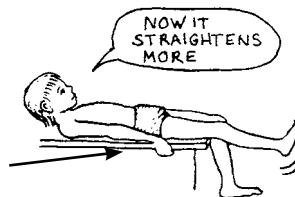
If it gradually straightens, spasticity (muscle spasms) may be what makes it difficult (see p. 79). (If it stops before it straightens completely, contractures may also be developing.)

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4. If a joint will not straighten completely, try with the child in different positions.



For example, a knee often does not straighten as much with the hips bent as with the hips straight.

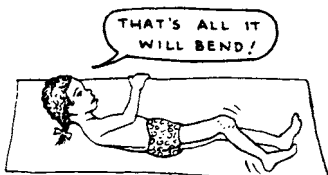


For this reason, each time you test range of motion to measure changes, **be sure the child is in the same position.**

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Position affects how much certain joints straighten or bend. This is true in any child, but especially in a child with spasticity (see pp. 101 to 103).

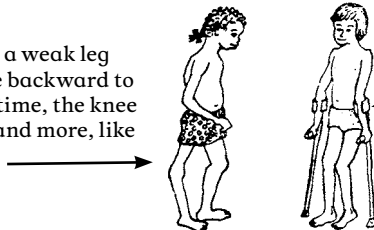
5. In addition to checking how much a joint straightens, **check how much it bends.**



If joints are kept straight and never bent, they may stiffen or develop contractures that do not let them bend. (This can happen with joint infection, arthritis, and other conditions, or when a joint is kept in a cast for a long time.)

6. Also check for **too much** range of motion.

A child who walks on a weak leg often "locks" her knee backward to keep from falling. In time, the knee stretches back more and more, like this.



The same thing can happen to the child with weak arms who uses crutches (or crawls).

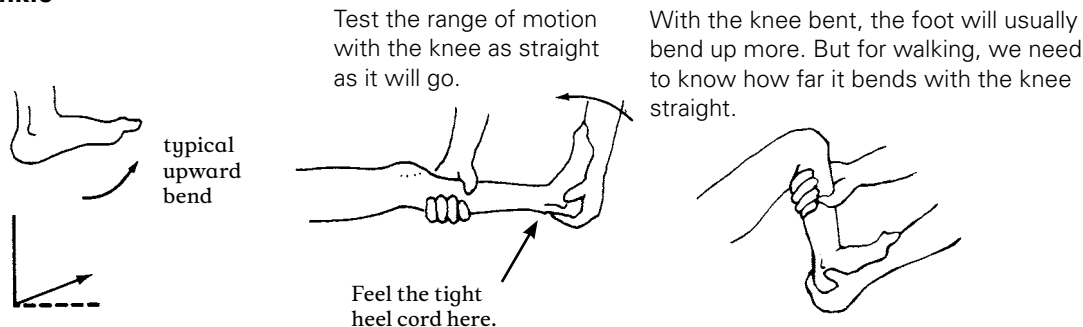
Usually the best positions for checking range of motion are the same as those for doing range-of-motion and stretching exercises. These are shown in Chapter 42.

For methods of measuring and recording range of motion, see Chapter 5.

Precautions when testing for contractures

Testing range of motion of the ankles, knees, and hips is important for evaluating many children with disabilities. We have already discussed knees. Here are a few precautions when testing for contractures of ankles and hips.

Ankle



Note: To check ankle range of motion in a child with spasticity (uncontrolled muscle tightening).

With his body and knee straight, it may be hard to bend the ankle.

So first bend his neck, body, and knees and then slowly bend up the ankle.

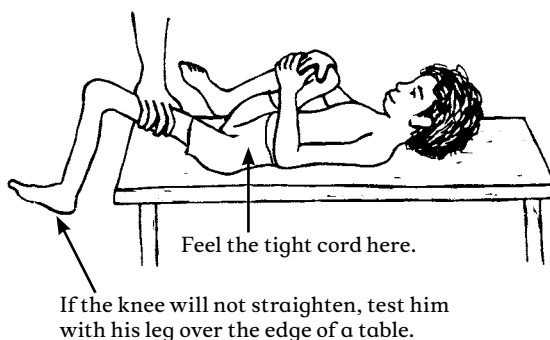
Then slowly straighten his knee while keeping the ankle bent.

Other precautions for testing ankle range of motion are on p. 383.

CP

Hip

To check how far the hip joint straightens, have the child hold his other knee to his chest, like this, so that his lower back is flat against the table. If his thigh will not lower to the table without the back lifting, he has a bent-hip contracture (see p. 79).

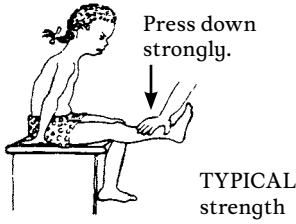


CAUTION: The hips will often straighten more at an angle to the body. So be sure to lower the leg in a straight line with the body, or you can miss contractures that need to be corrected before the child can walk.

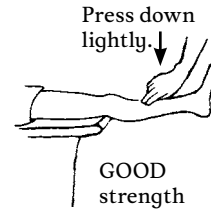
Muscle testing

Muscle strength can be anywhere between typical and zero. Test it like this:

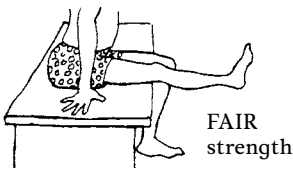
If the child can lift the weight of her leg all the way, press down on it, to check if she can hold up as much weight as is typical for a girl her age. If she can, her strength is TYPICAL.



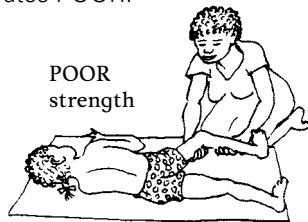
If she can hold some extra weight, but not as much as is typical, she rates GOOD.



If she can just hold up the weight of her leg, but no added weight, she rates FAIR.

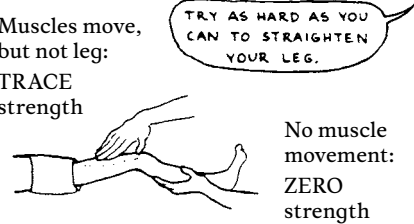


If she cannot hold up the weight of her leg, have her lie on her side and try to straighten it. If she can, she rates POOR.



If she cannot straighten her knee at all, put your hand over the muscles as she tries to straighten it. If you can feel her muscles tighten, rate her TRACE.

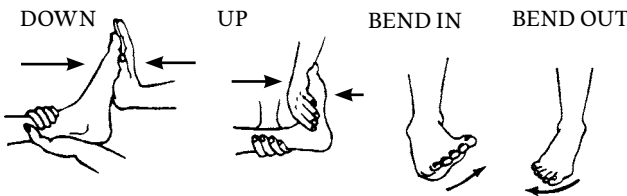
Muscles move, but not leg:
TRACE strength



Test the strength of all muscles that might be affected. Here are some of the muscle tests that are most useful for figuring out the difficulties and needs of different children.

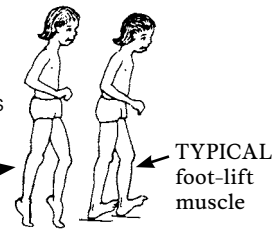
Note: These tests are simple and mostly test the strength of groups of muscles. Rehabilitation therapists know ways to test for strength of individual muscles.

Ankle and Foot



If the child can walk, see if she can stand and walk on her heels and her toes.

TYPICAL calf muscle



Note: Sometimes when the muscles that usually lift the feet are weak, the child uses his toe-lifting muscles to lift his foot.

If he lifts his foot with his toes bent up, like this,



see if he can lift it with his toes bent down, like this.



Also notice if the foot tips or pulls more to one side. This may show muscle imbalance (see p. 78).

EXAMPLES OF REASONS FOR TESTING

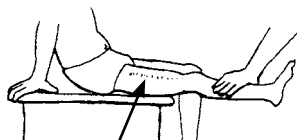
1. If strength to lift up the foot is WEAK and strength to push down is STRONG, tiptoe contractures may develop—unless steps are taken to prevent them (see p. 383).
2. An ankle with POOR or very uneven strength may be helped by an ankle brace. But if strength is FAIR, exercise may strengthen it—and a brace may weaken it more!
3. Lifting the foot with only the toe muscles may lead to a high-arch deformity.



To learn about which muscles move body parts in different ways, as you test muscle strength, feel which muscles and cords tighten.

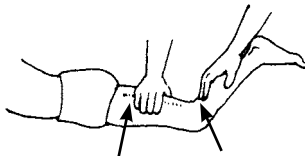
Knee

STRAIGHTEN



You can feel the muscle tighten on top of the thigh.

BEND



Feel the muscles tighten on the back of the thigh.

Feel the tight cords pull here.

EXAMPLES OF REASONS FOR TESTING



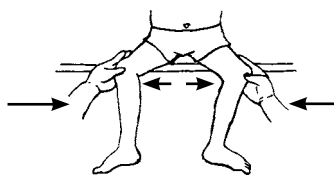
1. POOR or NO strength for straightening knee may mean an above-knee brace is needed.

2. Stronger muscles in back of the thigh than in front can lead to a bent-knee contracture.

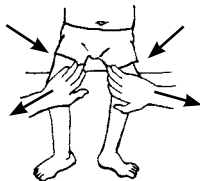


Hips

OPENING



CLOSING



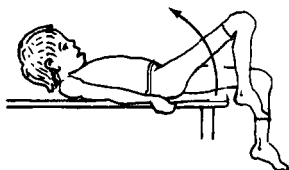
ROTATING HIP OUT (and leg in)



ROTATING HIP IN (and leg out)

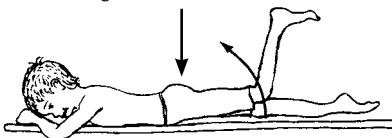


BENDING

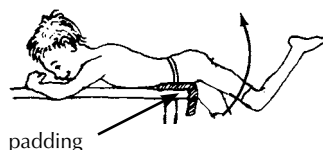


STRAIGHTENING

Feel the butt muscles tighten.

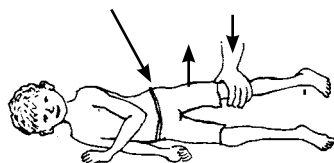


If the hip has contractures, test with legs off end of table.



SIDEWAYS LEFT

Feel the side-of-hip muscles tighten here.



Note: Weak hip muscles sometimes lead to dislocation of the hip. Be sure to check for this, too (see p. 155).

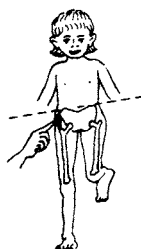
Testing side-of-hip muscles is important for evaluating why a child limps or whether a hip-band may be needed on a long-leg brace.

TEST FOR WEAK SIDE-OF-HIP MUSCLES IN THE CHILD WHO CAN STAND

Have the child stand on **the weaker leg.**

TYPICAL

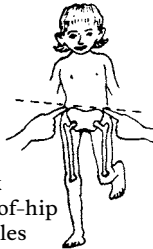
The child stands straight. The hip tilts up on the lifted leg.



NOT TYPICAL

The hip tilts down on the lifted side.

Or the child shifts his whole weight so it balances over the weak hip.



weak side-of-hip muscles



This child dips to the side on each step of the weak leg. (This is often seen with polio.)

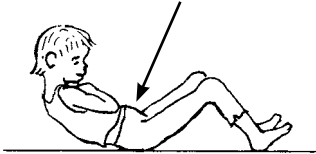
Note: Dipping to one side when walking is caused more by weak side-of-hip muscles than by a shorter leg. But a shorter leg can make dipping worse.

Stomach and Back

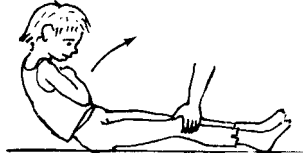
To find out how strong the stomach muscles are, see if the child can do "sit ups" (or at least raise his head and chest).

To test the back muscles, see if he can bend backward like this.

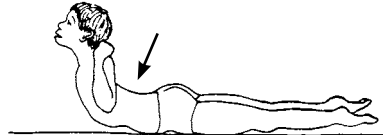
Sitting up with knees bent uses (and tests) mainly the stomach muscles. Feel stomach muscles tighten.



Sitting up with knees straight uses the hip-bending muscles and stomach muscles.



Feel the muscles tighten on either side of the backbone. Notice if they look and feel the same or if one side seems stronger.



You can check a child's **trunk control** and **strength of stomach, back, and side muscles** like this. Have him hold his body upright over his hips, then lean forward and back, and side to side, and twist his body.



If a child's stomach and back muscles are weak, he may need braces with a body support—or a wheelchair.



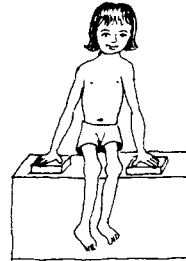
IMPORTANT: Be sure to check for **curvature of the spine**—especially in children with muscle imbalance or weakness of the trunk.

Shoulders, Arms, and Hands

When a child's legs are severely paralyzed but she has FAIR or better trunk strength, she may be able to walk with crutches **if** her shoulders, arms, and hands are strong enough.

Therefore, an important test is this.

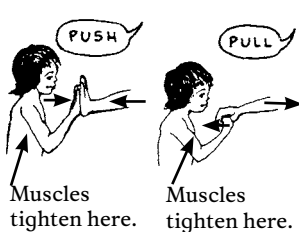
Can she lift her butt off the seat like this?



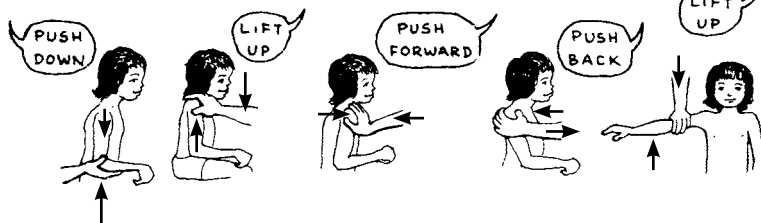
If she can, she has a good chance for walking with crutches.

If she cannot lift herself, check the strength in her shoulders and arms:

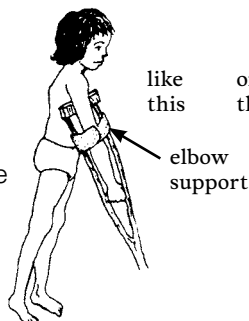
ARMS



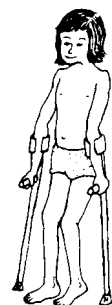
SHOULDERS



If the shoulder pushes down strongly but her elbow-straightening muscles are weak, she may be able to use a crutch with an elbow support.






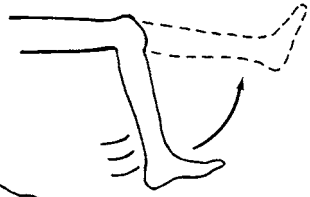

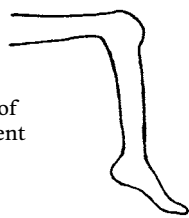
Or, if her elbows have full range of motion, she may learn to "lock" her elbow back like this. However, this can lead to elbow problems.



You may want to make a chart something like this and hang it in your examining area, as a reminder.

EVALUATING STRENGTH OR WEAKNESS OF MUSCLES

CAUTION: To avoid misleading results, check range of motion BEFORE testing muscle strength.

	<p>Strength rating</p> <p>↓</p>		<p>Test with the child positioned so that he lifts the weight of the limb.</p>
<p>Strong enough to be useful.</p>	<p>TYPICAL (5)</p>	<p>lifts and holds against strong resistance</p>	
	<p>GOOD (4)</p>	<p>lifts and holds against some resistance</p>	
	<p>FAIR (3)</p>	<p>lifts own weight but no more</p>	
<p>Too weak to be of much use for lifting or bearing weight.</p>	<p>POOR (2)</p>	<p>cannot lift own weight but moves well without any weight</p>	<p>Test with the child positioned so that he can move the limb without lifting its weight (by lying on his side).</p> 
	<p>TRACE (1)</p>	<p>barely moves</p>	
	<p>ZERO (0)</p>	<p>no sign of movement</p>	

In muscle testing, it is especially important to note the difference between FAIR and POOR.

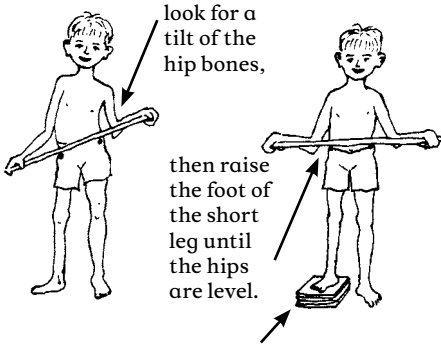
This is because FAIR is often strong enough to be fairly useful (for standing, walking, or lifting arm to eat). POOR is usually too weak to be of much use.

Sometimes with exercise POOR muscles can be strengthened to FAIR; this can greatly increase their usefulness. It is much less common for a TRACE muscle to increase to a useful strength (FAIR), no matter how much it is exercised. (However, if muscle weakness is due to lack of use, as in severe arthritis, rather than to paralysis, a POOR muscle can sometimes be strengthened with exercise to GOOD or even TYPICAL. Also, in very early stages of recovery from polio or other causes of weakness, POOR or TRACE strength sometimes returns to FAIR or better.)

Other things to check in a physical examination

Difference in leg length. When one leg is weaker, it usually grows slower, and becomes shorter than the other leg. An extra thick sole on the sandal might help the child stand straighter, limp less, and avoid curving of the spine. A short leg may also be a sign of a dislocated hip. So it helps to check for, and to measure, difference in leg length. (For tests, see pp. 155 and 156.)

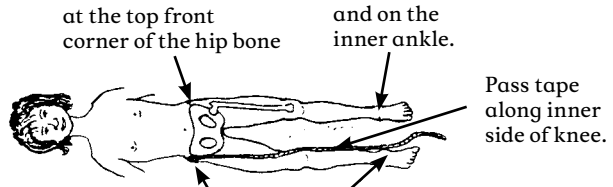
If the child can stand,



and measure the difference.

If she cannot stand,

have her lie as straight as she can. Feel and then mark, on both sides of her body, the bony lumps



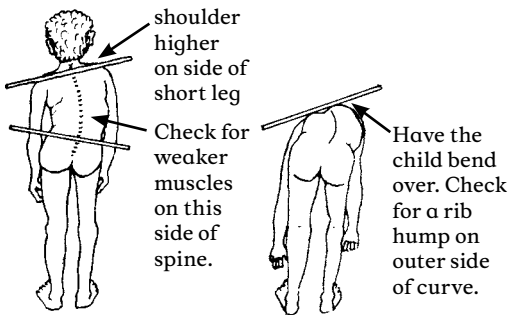
Then measure from here to here with a tape measure or string. Measure each leg and record the difference. If you used a string, just draw lines on your record sheet showing the actual difference in leg length.

LOLI'S DIFFERENCE IN LEG LENGTH (LYING DOWN)	
JUNE 3, 1986	—
SEPT 10, 1986	—
DEC 2, 1986	—

Curve of the spine

Especially when one leg is shorter or there are signs of muscle imbalance in the stomach or back, be sure to check for one of the following main types of spinal curve (which may occur separately or in combination):

Sideways curve (scoliosis)



Hunch back, rounded back (kyphosis)

May result from weak back muscles, or poor posture.

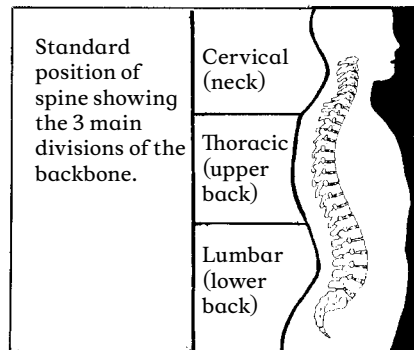


Swayback (lordosis)

May result from weak stomach muscles or bent-hip contractures. (Be sure to check for these.)



Some spinal curves will straighten when a child changes her position, lies down, or bends over. Other spinal curves will not straighten, and these are usually more serious. For more information about examining spinal curve and deformities of the back, see Chapter 20.



EXAMINING THE NERVOUS SYSTEM

Sometimes physical disability results from problems in the muscles, bones, or joints themselves. But often it comes from a problem in, or injury to, the nervous system.

Depending on what part of the nervous system is affected, the disability will have different patterns.

For example, polio affects only certain motor nerves at points in the spinal cord (or brain stem). It therefore affects movement. It never affects sensory nerves, so sight, hearing, and feeling are not affected (see Chapter 7).

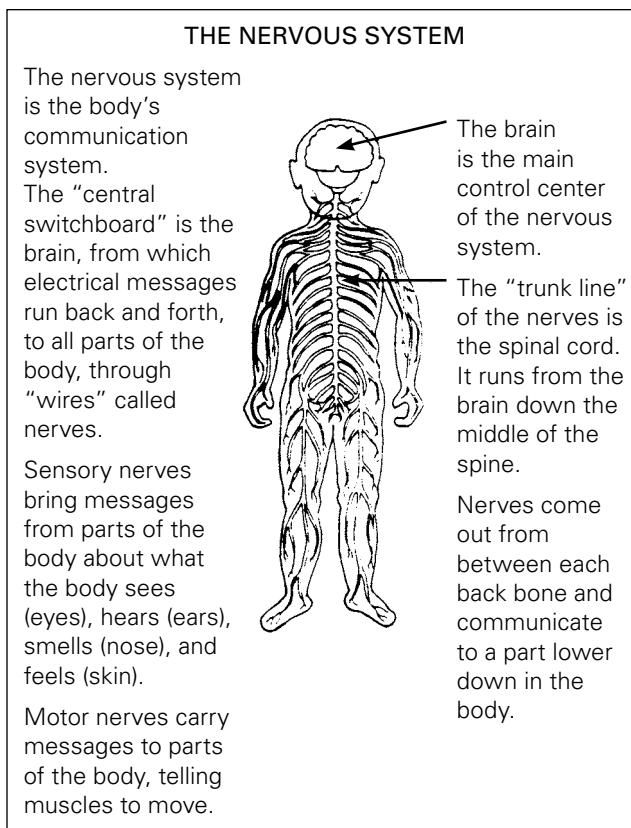
A spinal cord injury, however, can damage or cut both the sensory and motor nerves, so that both movement and feeling are lost (see Chapter 23).

Unlike polio and spinal cord injury, which come from damage to nerves in the spine, cerebral palsy comes from injury to the brain itself. Because any part or parts of the brain may be injured, any or all parts of the body may be affected: movement, sense of balance, seeing, hearing, speech, and mental ability (see Chapter 9).

Therefore, how completely you examine the workings of the nervous system will depend partly on what disability the child appears to have. If it is fairly clear the disability comes from polio, little examination of the nervous system is needed. But sometimes polio and cerebral palsy can be confused. If you have any suspicion that the disability might be caused by brain injury, you will want to do a fairly complete exam of nervous system function. Injury to the brain or nervous system can cause problems in any of these areas:

- seeing (See Chapter 30)
- eye movement or position (see pp. 40 and 301)
- seizures (epilepsy) (see Chapter 29)
- balance, coordination, and sense of position (see pp. 90 and 105)
- hearing (see Chapter 31)
- use of mouth and tongue, and speech (see pp. 313 to 315)
- mental ability; level of development (see pp. 278 and 288)
- feeling (pain and touch) (see pp. 39 and 216)
- unusual or strange behaviors; signs of self-damage (see p. 364)
- muscle tone (patterns of unusual floppiness, tightness, spasms, or movements) (see Chapter 9)
- reflexes; muscle jerks (see pp. 40 and 88)
- urine and bowel control (see Chapter 25)

Methods for testing some of these are included on the next few pages and on the RECORD SHEETS 2, 3, and 4. Other tests that you will need less often, we include with specific disabilities. Refer to the page numbers listed above.



EVALUATION OF A CHILD WHOSE DEVELOPMENT IS DELAYED

For the child who cannot do as much as other children do at the same age, a developmental evaluation may be helpful. Information about the mother's illnesses, contact with toxic chemicals (including medicines) during pregnancy, or difficulties during or after birth may contribute to understanding the child's condition. Measurement of the distance around the head may show possible causes of delays or other important factors. Repeated head-size measurements (once a month at first) may tell us even more.



For example, a child whose mother had Zika when she was pregnant, or who had meningitis (brain infection) at age 1, and whose head is small or takes longer to grow, will probably remain cognitively delayed. However, if the child's head continues to grow at a typical rate,, the child may have better possibilities for learning and doing more (although we cannot be sure).

A child who is born with a "sack on the back" (spina bifida, see p. 167) may have a head that is bigger than average. If the head continues to grow rapidly, this is a danger sign (see pp. 41 and 169). Unless the child has surgery, she may experience cognitive delay or die. If, however, the monthly measurements show that the head has stopped growing too fast, the problem may have corrected itself. She may not need surgery.



RECORD SHEET 4, on page 41, covers additional questions relating to child development, and includes a chart for recording and evaluating head size.

To help the child who is developmentally delayed, you will first want to evaluate her level of physical and mental development. Chapter 34, pages 287 to 300, explains ways to do this.

You can use the Child Development Chart on pages 292 and 293 to find a child's developmental level, to plan her step-by-step activities, and to evaluate and record her progress. We have marked this 2-page chart, RECORD SHEET 6.

RECORD SHEETS

On the next 5 pages are the sample RECORD SHEETS that we discussed on p. 22. You are welcome to copy and use them. However, they are not perfect. They were developed for use by the village rehabilitation team in Mexico, and we are still trying to improve them. Before you make copies, we suggest that you adapt them to meet the needs of your area.

**Be sure you have copies made of the RECORD SHEETS
you will need before you need to use them.**

In addition to the 4 RECORD SHEETS here, you may also want copies of RECORD SHEET 5 "Evaluation of Progress," p. 50, and RECORD SHEET 6, "Child Development Chart," pp. 292 and 293.

Note on RECORD SHEET 1 (CHILD HISTORY):

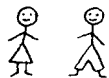
The box at the top of RECORD SHEET 1 is to be filled out **after** you examine the child. It gives brief, essential information. This will make it easier to find out which disabilities you have seen most often, and to check on what you still need to do for different children.

The last few questions on page 2 of RECORD SHEET 1 are for a study PROJIMO is doing on medical causes of disability. Adapt them to study specific concerns in your area.

File Number	TYPE OF DISABILITY	Movement _____	Future action:	Date:	Done:
		Deformity _____		_____ come back again	_____
Cognitive delay _____		_____ refer to specialist	_____	_____	
Visual impairment _____		_____ visit at home	_____	_____	
Hearing loss _____		_____ other _____	_____	_____	
Speech _____		_____	_____	_____	
Seizures _____		_____	_____	_____	
Behavior _____		_____	_____	_____	
Other _____		_____	_____	_____	
Code		Specific disability if known: _____			

RECORD SHEET 1 (page 1)

CHILD'S HISTORY (First visit)

Name: _____ Sex: 

Date of birth: _____ Address: _____

Age: _____ Weight: _____ Height: _____

Mother: _____

Father: _____ Telephone: _____

How did you learn about the program? _____

WHAT IS THE CHILD'S MAIN DISABILITY? _____

When did it begin? _____ How? (Cause?) _____

Other disabilities? _____

Is the disability improving? _____ Getting worse? _____ About the same? _____

Explain: _____

How do you hope your child will benefit from coming here? _____

Do other family members or relatives have a similar disability? _____ Who? _____

Has the child received medical attention? _____ What? _____

_____ Where? _____

Use any braces or other aids? _____ What? _____

Has the child used any in the past? _____ Explain: _____

How is the child's general health? _____

Is the child overweight? _____ Malnourished? _____ Other? _____

Hears and sees well? _____ Explain: _____

Comment on the child's developmental abilities or difficulties: _____ typical for age?

head control _____

use of hands _____

creeping or crawling _____

standing, walking _____

play _____

feeding or drinking _____

toileting _____

personal hygiene _____

dressing _____

Does the child speak? _____ How much or well? _____ Began when? _____

What other things can the child do? _____

What things can the child not do? _____

What new skills or abilities would you like to see your child gain? _____

RECORD SHEET 1 (page 2)

Is the child mentally typical? _____
 Cognitive delay? __ How severe? _____
 Why do you think so? _____
 Does the child have seizures? _____ How often? _____

Describe: _____
 Takes medicine? _____ What? _____
 For what? _____ Results (good or bad): _____
 Behavior typical for age? _____
 Behavioral or emotional problems? _____ Explain: _____

Goes to school? _____ What year? _____
 With whom does the child live? _____
 Number of children at home: _____ Ages: _____
 Father works? _____ At what? _____
 Mother works? _____ At what? _____

AVERAGE EARNINGS

The child seems: well-cared for? _____ spoiled or overprotected? _____
 neglected? _____ happy? _____ self-confident? _____ withdrawn? _____
 other? _____

Important details of family situation: _____

What has the family done, made, or obtained to help the child function better? _____

Other observations, information or drawings:
 (Use an additional sheet if necessary.)

History of illness	Date
measles	_____
chicken pox	_____
whooping cough	_____
other _____	_____
_____	_____

Vaccinations:	How many	Dates	Allergies
BCG (TB)	_____	_____	_____
polio	_____	_____	_____
DPT	_____	_____	_____
Hep B (Hepatitis B)	_____	_____	_____
measles	_____	_____	_____
tetanus	_____	_____	_____
other	_____	_____	_____

How much have you spent for your child's disability? _____ For what? _____

Were disability or complications caused by improper medical treatment or therapy? _____
 Explain: _____

FOR CHILDREN WITH PARALYSIS:

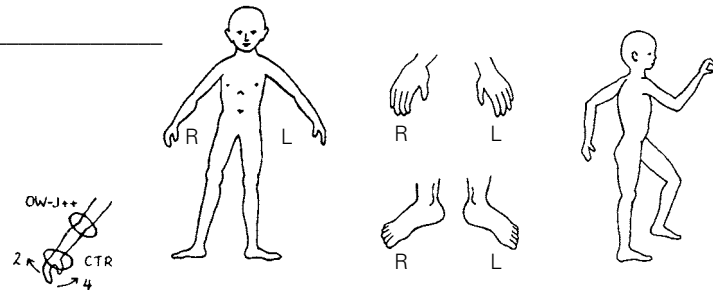
Was your child injected before becoming paralyzed? _____

SAMPLE RECORD SHEET FOR PHYSICAL EXAM

Child's name _____
 File number _____

RECORD SHEET 2

Mark on the drawings where development is not typical. Use lines and circles together with abbreviations shown on this page. For example: →
 Where necessary, make new drawings on another sheet.



<p>Parts of body affected</p> <p>L or R _____ other _____ (indicate)</p>	<p>Strength or weakness of muscles: Use this code</p> <p>TYPICAL 5 lifts and holds against strong resistance</p> <p>GOOD 4 moves against some resistance</p> <p>FAIR 3 lifts own weight but no more</p> <p>POOR 2 moves some but cannot lift own weight</p> <p>TRACE 1 barely moves</p> <p>ZERO 0 no sign of movement</p>																														
<p>OW: Pain OW-J pain in joints OW-M pain in muscles</p> <p>0 none +little ++a lot +++so much that she does not move it</p>	<p>T: ability to feel (touch, pain, etc.)</p> <table border="1" style="width:100%; text-align: center;"> <tr> <th>R or L</th> <th>normal</th> <th>*reduced</th> <th>*absent</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>other</td> <td></td> <td></td> <td></td> </tr> </table> <p>Problems with _____ *Eyes or sight. What: _____ *Ears or hearing. What: _____</p>	R or L	normal	*reduced	*absent									other																	
R or L	normal	*reduced	*absent																												
other																															
<p>CTR: contractures ___ tight muscles do not yield with pressure</p> <p>SP: spasticity ___ *tight muscles yield slowly with pressure</p>	<p>Deep tendon reflexes:</p> <table border="1" style="width:100%; text-align: center;"> <tr> <th>*nothing 0</th> <th>*little +</th> <th>normal ++</th> <th>*brisk +++</th> <th>*extreme ++++</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Other _____</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	*nothing 0	*little +	normal ++	*brisk +++	*extreme ++++											Other _____														
*nothing 0	*little +	normal ++	*brisk +++	*extreme ++++																											
Other _____																															
<p>Spine hunchback (kyphosis) side ways curve (scoliosis) sway back (lordosis) hard bump (TB?)</p> <p>curve fixed _____ curve can straighten (see p. 161)</p>	<p>HT: hips tilt</p> <p>R leg shorter _____ L leg shorter _____ by _____ cm</p> <p>DL: dislocations:</p> <table border="1" style="width:100%; text-align: center;"> <tr> <th></th> <th>R</th> <th>L</th> <th>from birth</th> <th>old</th> <th>new</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>other _____</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		R	L	from birth	old	new																			other _____					
	R	L	from birth	old	new																										
other _____																															
<p>* Spina bifida</p> <p>soft sac _____ back already operated ___ date _____ head already operated ___ date _____ extent of paralysis _____ extent of feeling lost _____</p> <p>*large head (hydrocephalus)</p>	<p>*Spinal cord injury what level _____</p> <table border="1" style="width:100%; text-align: center;"> <tr> <th></th> <th>Good</th> <th>Poor</th> <th>None</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Bowel control</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Bladder control</td> <td></td> <td></td> <td></td> </tr> </table>		Good	Poor	None					Bowel control				Bladder control				<p>Other problems</p> <p>___ *pressure sores ___ *unusual movements ___ *tremors ___ *seizures ___ *poor balance ___ *developmental delay</p>													
	Good	Poor	None																												
Bowel control																															
Bladder control																															

IMPORTANT: This form does **not** cover all the tests and information you will want to record when examining a child. Put other information on the back of this sheet. Or use separate sheets or forms.

If you check any problem area marked with a star (), a more complete check of the nervous system is needed. You can use the RECORD SHEETS 3, 4, and 6.

RECORD SHEET: ADDITIONAL TESTS AND OBSERVATIONS OF THE NERVOUS SYSTEM

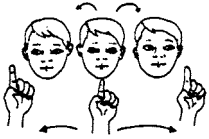
RECORD SHEET 3

These tests are often not needed but may sometimes be useful when you are not sure if a child has brain injury. For other signs of brain injury, see Chapter 9 on cerebral palsy. For tests of seeing and hearing, see p. 447 to 454.

Eye movement

- eyes jerk, flutter, or roll up unexpectedly and repeatedly (brain damage, possible epilepsy— p. 233)
- one eye looks in a different direction or moves differently from the other (possible brain injury)

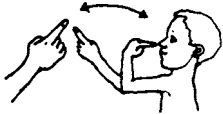
Move finger or toy in front of eyes from side to side and up and down.



- eyes follow smoothly (typical)
- eyes follow in jumps or jerks (possible brain injury)


Eye to hand coordination

- moves finger from nose to object and back again almost without error—with eyes open, and also closed (typical)
- misses or has difficulty with eyes open (difficulty with coordination, balance or sense of position)
- has much more difficulty with eyes closed (loss of position sense)



Body movements

- awkwardness or difficulty in controlling movements
- sudden or rhythmic uncontrolled movements
- parts of body twist or move strangely when child tries to move, reach, walk, speak, or do certain things



(All these may be signs of brain injury; see Chapter 9.)

Details of any of the above: _____

Seizures of different kinds (see Chapter 29)

- sudden loss of consciousness with strange movements,
- brief periods of strange movements or positions,
- blank stares, ___ eye fluttering, ___ twitching.

Developmental delay: Is the child unable to do many different things that others her age can do? Which? (see Chapter 34)

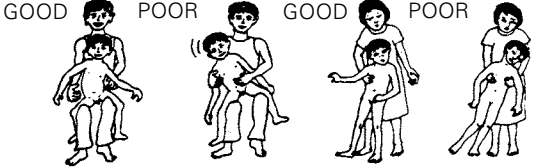
— head control	— sucking
— use of hands	— eating
— rolling	— playing
— creeping and crawling	— communication or speech
— sitting	— behavior
— standing and walking	— self-care activities

Balance

With the child in a sitting or standing position, gently rock or push him off balance.

- CHILD DOES NOT TRY TO KEEP FROM FALLING (difficulty with coordination, balance or sense of position)
- CHILD TRIES NOT TO FALL by putting out his hands (fair balance)
- CHILD KEEPS FROM FALLING by correcting body position (good balance)


GOOD POOR GOOD POOR



Balance test for the older, more stable child





Have child stand with feet together.

- balance difficulty with eyes open—may be brain injury (or muscle-joint problem)
- balance difficulty much greater with eyes closed (probably nervous system injury)



Knee jerks and other “muscle jump” reflexes


With the leg relaxed and partly bent, tap the cord just below the knee cap.

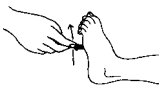

TYPICAL	REDUCED	OVER ACTIVE	KEEPS JUMPING
			
The knee jumps a little.	The leg moves very little or not at all. Typical of polio, muscular dystrophy, and other floppy paralyses.	A slight tap causes a big jump . Typical of spasticity from cerebral palsy, spinal cord injury, and other brain or spinal cord injury.	One tap causes the limb to jerk many times. Happens with spinal cord injury and some cerebral palsy.

You can also tap the heel cord and other cords near joint.

Great toe reflex

Stroke the foot toward the toe with a somewhat pointed object (like a pen).



TYPICAL	NOT TYPICAL (in a child over 2)
	
toes bend down	toes bend up and spread

This is a sign of brain or spinal cord injury (Babinski's sign). May occur in any child under 2 years.

RECORDS OF FACTORS POSSIBLY AFFECTING CHILD DEVELOPMENT

(mainly for children with possible brain injury or developmental delay)

RECORD SHEET 4

Added history

Was the child born before 9 months? _____ at how many months? _____
 Was the child born very small or thin? _____ weight at birth? _____
 Was the birth of the child normal? _____ slow or difficult? _____
 Explain: _____
 Did the child seem typical at birth? _____ If not, describe problems: delayed breathing? _____
 very floppy? _____ other? _____
 Did the mother have problems in pregnancy? _____ German measles _____ at _____ months.
 Other? _____ Medicines or drugs during pregnancy: _____ What? _____
 Age of mother _____ and father _____ at time of child's birth.

Physical exam

Does the child show signs of brain injury? (Use RECORD SHEETS 3 and 4.)
 What? _____
 Does the child show signs of Down syndrome? _____
 What? (wide, slanted eyes _____, crease in hand _____, other _____. See p. 279.)
 Other physical signs, possibly related to cognitive delay _____
 Does the child's head seem smaller _____ or larger _____ than typical?
 Distance around head? _____ cm. Difference from average _____ cm.
 Average at her age (from chart) _____ cm. Difference from average _____ cm.

Record of the child's head size

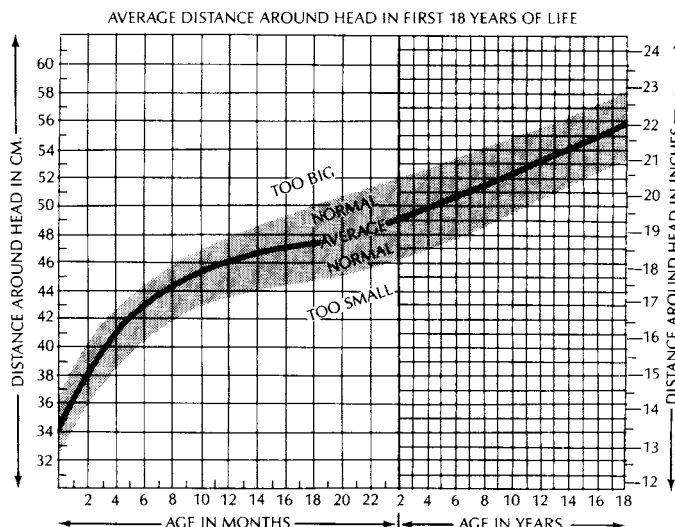
On the chart put a dot where the up-and-down line of the child's age crosses the sideways line of her head size:



If the dot is below the shaded area the head is smaller than typical. The child may be **microcephalic** (see p. 278).



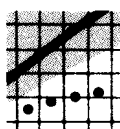
If the dot falls above the shaded area, the head is bigger than typical. The child may have **hydrocephalus** (see p. 169).



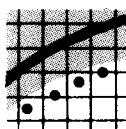
Note: Boys' heads average from 1/2 to 1 cm. larger than girls' heads. Also head size may vary somewhat with different ethnic groups. If possible get local charts.

Use the chart for a continuing record. Every month put a new dot on the chart.* If the difference from average increases, the condition is more likely to be serious. For example,

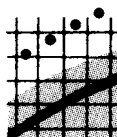
Brain not growing much. Probably microcephalic.



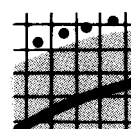
Brain growing well. Probably not serious.



Head too big; growing fast. Hydrocephalus or tumor. Getting worse.



Large head. Probably not a problem.



* Filling out this chart every month is especially important for children with spina bifida or suspected hydrocephalus (see p. 169). If you do not know how to use the chart, ask a local schoolteacher.

