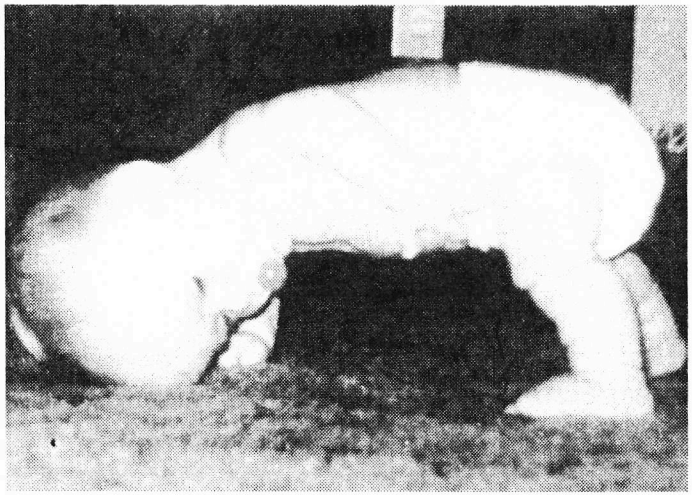
Learning to Get Around

The physical characteristics just listed not only help explain why motor development may be delayed but, in addition, help explain unusual movement strategies that are often seen in children with achondroplasia. Many children with achondroplasia do not pass through the customary stages of ambulatory development that lead to learning how to walk. Often, a child's chosen methods of getting around cause worry for parents, and often for the child's doctors, too. Both physicians and parents tend to expect a particular sequence of development in all babies. This includes, for example, traditional, reciprocal crawling. [Crawling on hands and knees seems so universal that, in fact, a discredited and untrue theory postulated that children who failed to learn to crawl would have, as a consequence, serious developmental and behavioral problems later in life.]

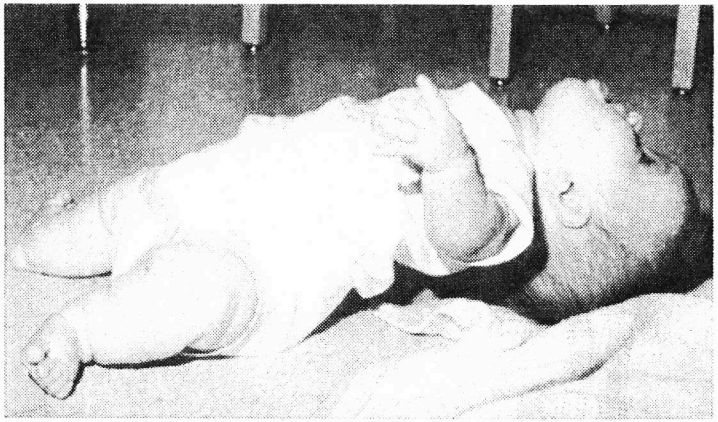
But many children with achondroplasia choose alternative methods of getting around. Many never crawl in the traditional fashion. Indeed, only about 20% of children with achondroplasia ever crawl in that traditional way. Crawling often is not a very efficient way to get around for a child with achondroplasia. Short arms and short legs means that children with achondroplasia who try to crawl in the traditional way may find that their plump bellies are still dragging on the floor. And, traditional crawling requires a child to be able to hold the head up. Because children with achondroplasia have large and heavy heads, as well as hypotonia and instability of the neck, holding the head up in a crawling position for an extended period is difficult.

Instead, many infants and young children with achondroplasia choose alternative strategies that circumvent the problems that arise with traditional crawling. Many may choose 'snowplowing', 'reverse snowplowing' or 'spider crawling'.

In both snowplowing and reverse snowplowing the large, heavy head serves as a balancing tool while the legs and feet push the child forward:



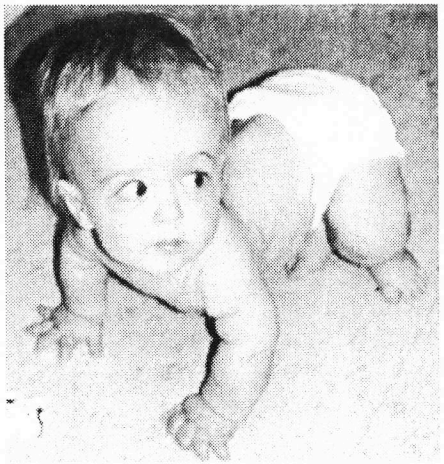
snowplowing



reverse snowplowing

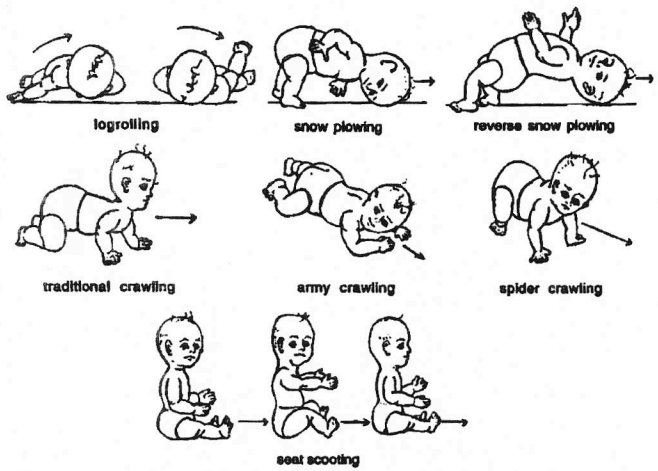
More than half of children with achondroplasia choose to snowplow at some point and nearly half use reverse snowplowing as a way of moving from place to place.

Spider crawling is almost never seen in children of average stature but is used by about a quarter of children with achondroplasia. Spider crawling, in contrast to traditional crawling, which is on the hands and knees, involves support by the hands and feet. Although the head needs to be supported, spider crawling more easily allows the belly to be cleared from the floor.



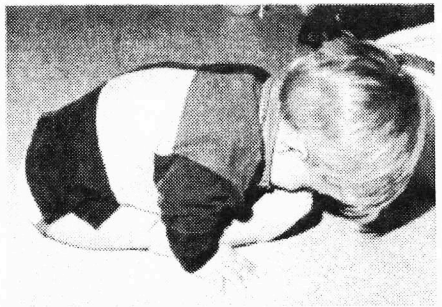
spider crawling

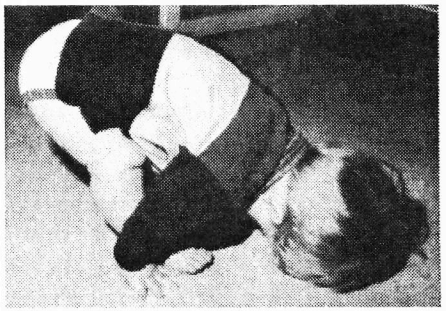
In addition to these unusual methods of getting around, many children with achondroplasia will show long preference for army crawling, logrolling or seat scooting. Logrolling may be particularly common in children with achondroplasia (and is the preferred means of locomotion in about half) because it avoids the need for joint stabilization and muscle strength in the arms and legs. Likewise, army crawling allows the weight to be distributed to the hands, arms, stomach, legs and feet and allows the head to be periodically rested on the floor; this is probably helpful in a child with hypotonia, joint hypermobility and a heavy head.

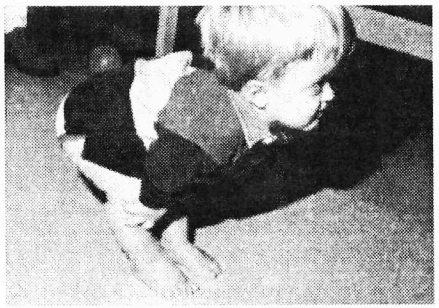


Position Transitions

The combination of short limbs, excessively mobile hips and trunk, unstable knees and a large head often results in children with achondroplasia demonstrating unusual, but adaptive, ways of getting from sitting to standing. Children of average stature most often will transition by first going to a squatting or kneeling position and then standing up. In contrast, many children with achondroplasia learn to 'jackknife'.

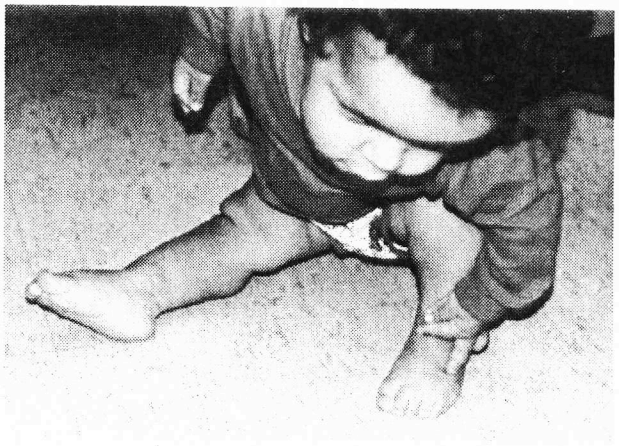




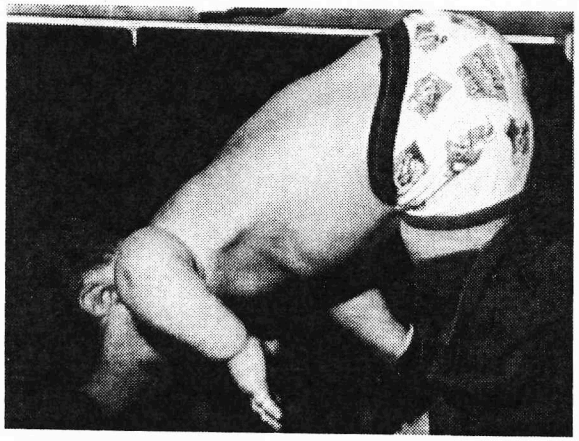


Jackknifing begins with the child fully extending the legs while sitting. Next, bending only at the waist, the body is fully flexed and the head is placed on the floor. Using the head for balance, the child next wedges up over fully extended legs — pushing with the legs, followed by extension of the torso. Remarkably, this results in transition from sitting to standing without ever bending the knees. We suspect that this strategy is chosen principally because of the instability of the knees seen in many children with achondroplasia. Jackknifing allows transition with the knees straight and locked, while rising from a kneel or squat requires dynamic stabilization of the knees — something that is very hard for many children with achondroplasia.

'Wedging up' is a somewhat less desirable method of tran-sitioning to standing. Some children will push one leg out straight and then use that one straight leg to support all of the body's weight in getting to stand. Unfortunately, wedging up over one leg seems to increase the chance of progressive soft tissue instability at the knee and may make more likely the need for surgical intervention.

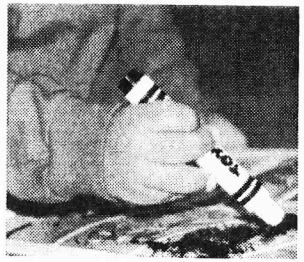


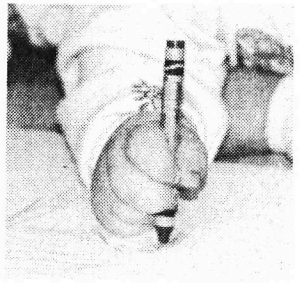
Dressing and undressing may pose a problem as well because of limb shortening, limited elbow extension, a prominent bottom and a heavy head. Some children learn unusual ways of surmounting such problems, taking advantage of trunk mobility to compensate for the short reach, and figuring out a way to stabilize the head at the same time.



Fine Motor Skills

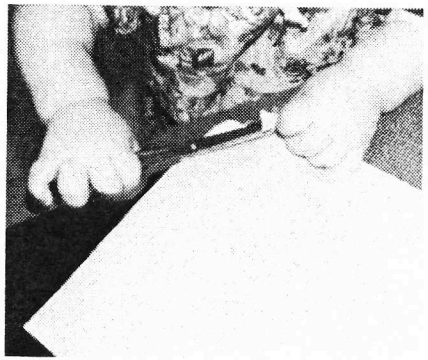
Children with achondroplasia often use unusual methods to hold writing implements. Because of the child's short fingers, the excessive separation between the middle and ring fingers and hypermobility of the finger joints, often crayons or pencils will be used with a two-finger or four-finger grip rather than the more traditional pencil grip.





These grips, while 'abnormal', are, in fact, adaptive and should not be discouraged. Many adults with achondroplasia use a two-finger method without sacrificing quality or efficiency of handwriting.

Scissors also may be problematic. In addition to the hand characteristics described, children with achondroplasia often have excessive elbow pronation (palm down) and either limitation or reluctance to use elbow supination (palm up). Such supination is necessary for traditional scissor use.



When Can I Expect My Child To.....

Principally because of various physical features, children with achondroplasia not only have some unusual adaptive ways to perform motor tasks, but, overall show delays in attaining many developmental skills. Such delays usually do *not* reflect cognitive limits. The table lists certain milestones that parents often observe, the average age at which average statured children attain these skills and the ranges of age within which most children with achondroplasia accomplish the same skills.

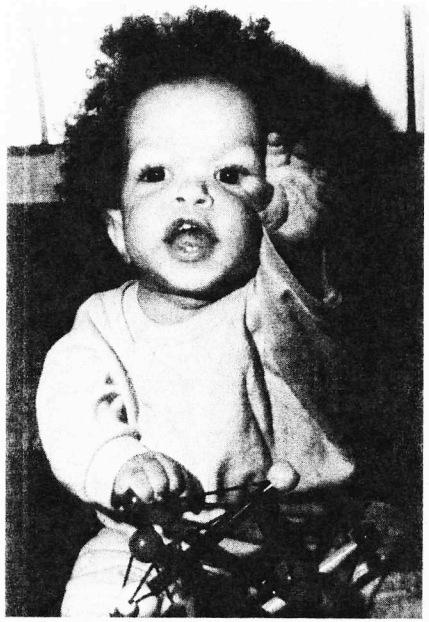
SKILL	Range (in Months) for Children with Achondroplasia (25th-90th %ile)	Average Age in Average Statured Children (in Months)
Sit, without support*	9 - 20.5	5.5
Pull to stand	12 - 20	7.5
Stand alone	16 - 29	11.5
Walk	14 - 27	12
Reach	6 -15	3.5
Pass object	8.5 -14	6
Bang 2 objects	9 - 14	8.5
Scribble	15 - 30	13.5

*We actively discourage unsupported sitting prior to at least 12-14 months of age in babies with achondroplasia.

If your child's development is substantially outside of the ranges given you should talk more with your child's physician.

To Celebrate

Parents, physicians, early childhood educators and therapists should recognize that the different movement strategies exhibited by a child with achondroplasia are not usually a cause for worry nor should they be thought of as abnormal. The child is simply adapting to his or her physical differences. In fact, the ability of children with achondroplasia to invent and utilize effective, alternative ways of doing things reflects their resourcefulness and problem solving skills and, then, is something *to celebrate.*



For further information parents may wish to contact:

Little People of America (LPA)
P.O. Box 9897
Washington, D.C. 20016
1-888-LPA-2001
http://www-bfs.ucsd.edu/dwarfism

LPA Discussion Group on Line
to subscribe: send email to listserv@ucsd.edu;
at message type: subscribe dwarfism
to send messages: send to dwarfism@ucsd.edu

LPA Parent Coordinators
Rob & Betty Jacobsen
3010 Olympia Way
Longview, WA 98632
(360) 636-0276
jacobsen@aone.com

Other Resources:

Dwarf Helpline - Toll free number provides you with organization listings, products and services specific to short statured individuals, physicians in your area, and much more! **1-800-24DWARF**

Thinking Big by Susan Kuklin
New York: Lothrop, Lee & Shepard Books, 1986. 48 pages

Dwarfism: The Family and Professional Guide by Charles Scott, Nancy Mayeux, Richard Crandall and Joan Weiss
Irvine, CA: Short Stature Foundation & Information Center, Inc., 1994. 195 pages

Living with Difference, Families with Dwarf Children, by Joan Ablon
New York: Praeger (Greenwood), 1988. 194 pages