

# Climbing

from The Play & Playground Encyclopedia  
[www.pgpedia.com](http://www.pgpedia.com)

Climbing is an activity that children enjoy from an early age. Most children find climbing fun and strive to accomplish reaching the highest point possible to view the world around them. Exploration is an important part of climbing, whether they are climbing a tree or scaling a rock wall. They climb for excitement and the feeling of achievement when they overcome challenges, test their abilities, and show off for others. Peer pressure and encouragement from others often motivates children to climb structures and accept challenges. Children are also found playing on climbing structures as they engage in dramatic play and chase games.<sup>1</sup>

As babies begin to crawl and explore their world, they are soon able to pull themselves up on edges of furniture and climb over low obstacles. As their walking develops, they fearlessly attempt more climbing not seeing any danger. Until the age of 4, boys and girls show the same ability in their climbing skills, however, after this age, boys develop more strength than girls. By the age of 6, most children can perform the basic motor skill tasks required for climbing on the level of an adult. By the age of 9 or 10, children become more aware of height and may develop a fear of heights. They also often start to play more sports games by the age of 10 and climb less, although climbing rock walls remains a popular activity for older children.<sup>2</sup>

Children who are good climbers tend to be lightly built and are strong. They move in a relaxed, easy manner looking around and concentrating on several things at the same time while climbing. They take alternating steps and easily choose the best technique for each object.<sup>3</sup> The motor skills of climbers are developed much quicker than non-climbers. In fact, practice in climbing on challenging climbers is a better predictor of skills than the size or age of a child.<sup>4</sup>


When climbing, children draw on a combination of cognitive skills, such as memory, visualization, and problem solving. They also have physical requirements that involve body, spatial and directional awareness as well as physical abilities, such as power, agility, speed, balance, and



Photo Credit: Staff Photo

coordination. Good visual perception is required to effectively determine foot and hand holds, also known as affordances, when climbing. The development of their perception of affordances results in a number of factors, including leg strength, limb lengths, locomotor abilities, and experience in climbing. As children have more experience in climbing, they will be better at perceiving distances and their reaching capacities. Children who have difficulty climbing may lack good fitness, be overweight, or have a physical disability.<sup>5</sup>

Besides climbing natural challenges, such as trees, rocks, and hills, today's playgrounds offer lots of new, innovative climbing structures. The jungle gym from the past is now upstaged by sophisticated climbing frames, rope networks, rock climbing walls, and irregular shaped objects.<sup>6</sup> Interesting ladders to platforms

have been added to playground equipment that make climbing more challenging. 

## Reference

- 1 Frost, Joe L., Pei-San Brown, John A. Sutterby, Candra D. Thornton. *The Developmental Benefits of Playgrounds* Olney, MD: Association for Childhood Education International, 2004. pp. 55, 126-127.
- 2 Van Herrewegen, Jenny, Johan Molenbroek, and Hedy Goossens. "Children's Climbing Skills." ANEC. <<http://www.anec.org/attachments/re1007-04.pdf>> 21 Oct. 2010.
- 3 Ibid.
- 4 Frost, Joe L., Pei-San Brown, John A. Sutterby. "Climbing Behavior: The Nature and Benefits of Children's Climbing Behaviors." PlayCore. <<http://www.playcore.com/upload/file/frost-climbing-final.pdf>> 21 Oct. 2010.
- 5 Op. cit., Frost. pp. 127-131.
- 6 Op. cit., Van Herrewegen, Molenbroek, and Goossens.



# 21<sup>st</sup> Century Climbing Event Manufacturing Materials

by Jan Neish

What kid, of any age, can resist the challenge to climb to the top? On playgrounds these opportunities often come through boulders and climbing nets. In recent years, the composition of these “challenges” has seen some innovations as outlined below.

Boulders are naturally heavy, and as that is costly to ship and install, most of the newer materials are aimed at creating lighter boulders that remain strong and durable. Another important consideration for innovative manufacturers is having a “natural” rock surface for increased enjoyment and climb-ability.

Listing in order of heaviest to lightest, the available materials for climbing rock formations are cement, PolyFiberCrete, Glass Fiber Reinforced Concrete (GFRC), and fiberglass. Both cement and PolyFiberCrete are a molded process producing a solid single-material single-colored boulder, while the GFRC and fiberglass boulders are a shell or shells of material over an inner steel framework resulting in lighter-weight boulders. Besides the construction process, the main difference between these materials comes down to the amount of glass fibers added to the cement base – ranging from none in cement to totally in fiberglass. The addition of glass fibers results in boulders with more elasticity and less likelihood of cracking.

The climbing surface texture desired for greater realism and grip-ability comes from adding ceramic (sand) to the mixture, unmolding partly cured mixtures into sand, and/or allowing air bubbles in the mixture for a greater textured substance. On the outer layer, often a polymer resin sealant is used to resist color weathering from the open playground environment and to resist damage from graffiti. As to the boulder grips, the industry uses molds created from actual climbing rocks, hand sculpted grip surfaces, or bolted on hand holds.

Beyond boulders, or sometimes used in conjunction with boulders, climbing nets are another way to feel like you are at the top of the world. Material considerations with climbing ropes and nets

involve strength, durability, and grip friendliness. Strength factors, and consequently public safety, currently revolve around the amount of steel core that is utilized, while the grip considerations come from the size and nature of the cable fiber jackets. And naturally, durability is the goal with both of these factors.

Stainless steel cables range from 16 mm to 25 mm in diameter composed of generally 6 coated strands around a core strand. This core may be a 3 strand fiber core or another steel wire strand – often the edge cables in a climbing design will have this inner steel strand for added strength. How many steel wires are in each steel strand can vary from company to company resulting in different tensile strengths.

However, the search for strength and durability needs to be mitigated by size, since children’s hands can only comfortably grip a rope of generally the 16-20 mm size. Larger diameter cables are usually used for structural strength and anchoring purposes.



The fiber jackets employed in climbing nets are of either polyester or nylon composition and cover each of the outer strands for both grip texture and color options. The inner core may or may not be covered as well. Additionally some of the outer fiber jacket materials have been treated with UV protection agents, flame retardant solutions, and/or a neon reflective color for added visibility.

Whether standing tall as the main feature of a playground or combined in creative configurations, boulders and cable nets naturally bring climbing excitement to playgrounds. And the materials being utilized today are bringing added safety, durability, new design possibilities, and greater climbing frontiers. **FCP**

