

## Climbing Behavior: The Nature and Benefits of Children's Climbing Behaviors

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*A PlayCore sponsored study conducted by Joe L. Frost, EdD, LHD; Pei-San Brown, MA; John A. Sutterby, PhD; Candra D. Thornton, PhD.*

### Background

Before the nineteenth century introduction of manufactured playground climbers, children climbed natural challenges such as trees, hills, and rocks and they climbed on built structures such as houses, barns, and bridges. With the introduction of specific climbing apparatus they climbed at school playgrounds and in parks and other playgrounds. Installing the early outdoor climbing apparatus or outdoor gymnastic equipment in American playgrounds was an idea borrowed from Germany where such equipment was intended to assist children's moral and physical development. Early in the twentieth century, growing varieties of manufactured and hand-built playground climbers were created to meet diverse interests of children of different ages and skill levels. Presently dozens of types exist and the range of choices continues to grow.

Research of the late twentieth century established climbing as a developmentally beneficial activity for children. A number of requirements for climbing contribute to children's cognitive development – memory, problem solving, and imagery/visualization, all influencing improved climbing skills. The affective domain is also influenced through feeling states such as fear, motivation, stress, and relaxation, all promoting scope and success in climbing and the development of locomotion behaviors. Perceptual-motor skills such as spatial, directional and body awareness are sharpened through climbing as are motor fitness skills such as agility, speed, power, balance, and coordination.

### Research Questions

The questions guiding this study included:

- 1) What is the developmental progression of climbing?
- 2) How do children's climbing behaviors differ across types of climbing equipment?
- 3) What is the difficulty level of various types of climbing equipment?
- 4) Which climbing equipment is most beneficial?

### Methods

The questions were answered by reviewing research in professional journals and employing both qualitative and quantitative research tools, including observation, anecdotal notes, videotaping, and digital photography. Both formative and summative methods were used in analyzing data. The study utilized thirteen different types of climbers used daily by kindergarten, first, second, and third grade children.

**Findings**

The levels of developmental progression were categorized as beginner, intermediate and advanced according to climbing skills observed. Climbing levels achieved were generally specific to age groupings with wide individual differences within the grade levels observed. Sample findings of developmental progression included hand to hand and foot to foot patterns and cautious, slow speed for beginning level children; hand to hand, foot over foot, alternating patterns, and improved confidence on learned skills for intermediate level children; hand over hand, skipping patterns, and confident, quick and precise movements for advanced level children.

Certain types of climbers encourage or require children to engage in specific types of climbing behaviors. These included use of both hands and feet, use of feet and lower body, use of hands and upper body, use of equipment in multiple ways, and balancing the body on moving equipment. The slope of equipment, types of handholds, distance between components and various other features contributed to these different patterns of use.

Variations in difficulty levels were related to such factors as complexity of components, height of climbers, spaces between rungs, configuration and size of foot and hand-holds, and degree of incline. Beginners who were successful in climbing up were less comfortable climbing down, using slower, more cautious movements, but this improved rapidly with practice. Advanced climbers ran up some climbers and jumped from the deck or destination to ground level without using the climbers. Some children who used the easiest to climb apparatus at the intermediate or advanced level would revert to beginner level when climbing more complex or difficult climbers.

Many factors enter into assessing the developmental benefits of climbers and in determining which are more beneficial. These include developmental levels and needs of child audience, frequency of use, levels of challenge, and degree of open-endedness. Experience and practice are essential for development through the sequential patterns leading to skills characteristic of sophisticated climbing.

**Discussion**

The findings of this study provided clearer insight into designing climbers to match developmental skill levels of child audiences. For example, the validity of “Physical Stature + Rise height + Skill = Preference, demonstrated in this study, contributed to rethinking climber design, especially for younger, beginning stage children. Later studies of upper elementary age children (fourth and fifth grade) by the researchers in this study demonstrated that many climbers intended for the broad age range, two to twelve years, are far too tame for children in the advanced stages.

Children in advanced stages were usually children in middle and upper elementary grades where organized games rapidly replace much of younger children’s exploratory and make-believe or symbolic play. Consequently, advanced children, especially boys, used climbers that supported such games as chase and tag. Linked configurations were most supportive of such activities because alternate exit options were needed for chases to keep away from chasers. Older girls, even those advanced in climbing skills, often joined

boys in organized games but also used spaces that allowed small groups to sit or swing and “talk with friends.” Such findings contributed to modifications in playground design.

Anthropometric data are an important yet incomplete factor in matching climbers to child players. Beginners advance rapidly when climbers are available and they quickly outdistance non-climbers in developing motor skills. In other words, practice in climbing on challenging climbers is, for many children, a better predictor of skill than their size or age. Those who climb early appear to be more comfortable, motivated and safer in their climbing than are non-climbers. Obese children are frequently exceptions to common observations. They may not advance in climbing skills or advance very slowly, leading to lack of confidence and discontinuity in climbing.

The findings of this research resulted in examination and modification of climbers and development of new climbers. These alternatives and new designs include flexible climbers, molded plastic climbers and “fall free” climbers installed in a wide range of configurations. The research also led to re-examination of linkages between climbers and other forms of equipment to allow rough and tumble play and organized games such as chase and tag, which are very popular with older children and provide extensive developmental benefits.

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More extensive discussions of this and related studies are available in:

Frost, J. L., Brown, P. S., Sutterby, J. A. and Thornton, C. D. (2004). *The Developmental Benefits of Playgrounds*. Olney, MD: Association for Childhood Education International.

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