

## Reference

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# Prescription of the first prosthesis and later use in children with congenital unilateral upper limb deficiency: A systematic review

Prosthetics and Orthotics International, August 2006; 30(2): 165 – 173.

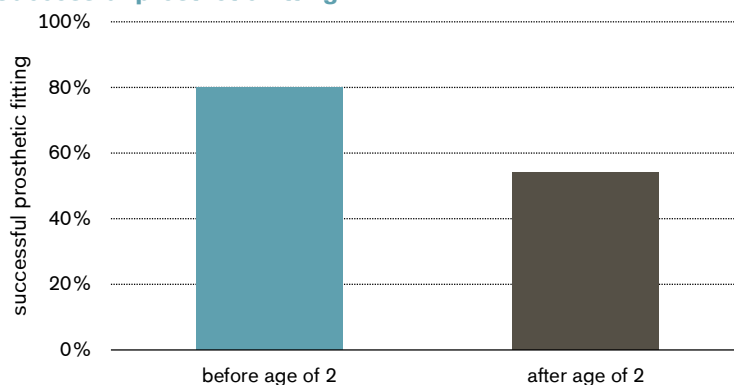
## Products

**Passive and active prostheses for children**

## Major Findings

**When children are fitted with a first prosthesis prior to the age of 2:**  
→ Lower rejection rates were observed (up to 22 years follow-up)  
→ Functional outcomes seem to be more favourable

### Successful prosthetic fitting



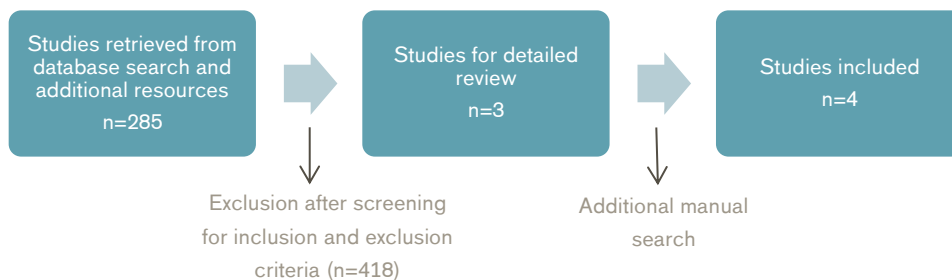
80% of children younger than 2 years and 54% of children older than 2 years were successfully fitted. The successful fitting was reflected through prosthesis wearing time, operating skill, applied use and acceptance of the prosthesis.

## Population

Subjects: 32 - 166 patients with congenial unilateral upper limb deficiency  
Previous prostheses: no fitting vs. passive/ active fitting before age of 2 y  
Amputation aetiology: congenital malformation  
Mean age: not reported  
Mean time since amputation: < 2 years n= 168  
> 2 years n= 115

## Study Design

Systematic Review:



Included publications: Retrospective cohort studies (4), follow up ranging from 1 - 22 years

Quality assessment: All selected studies were retrospective cohort studies with low methodological quality. The included publication spanned the years from 1965 to 1999.

## Results

Body Function		Activity			Participation	Others	
Mechanics	Pain	Grip patterns / force	Manual dexterity	Activities of daily living (ADL)	Satisfaction and Quality of life (QoL)	Training	Technical aspect

Category	Empirical Evidence Statements	Supporting publications	Level of confidence
Satisfaction	Lower rejection rates were reported in children who were provided with their first prosthesis prior to the age of two years.	4	Low
	80% of children younger than 2 years and 54% of children older than 2 were successfully fitted. The successful fitting was reflected through prosthesis wearing time, operating skill, applied use and acceptance of the prosthesis.	1	Low
Activities of daily living (ADL)	Functional outcomes seem to be more favourable in those children fitted before two years of age.	2	Low
	Active prehension was better in children fitted prior to the age of 2.	1	Low
	Prosthesis adjustment score was improved when children were fitted with the prosthesis before age of 2. Improvement was observed in categories: <ul style="list-style-type: none"> <li>- Wearing time</li> <li>- Operating skill</li> <li>- Applied use</li> <li>- Acceptance</li> </ul>	1	Low

\* no difference (0), positive trend (+), negative trend (-), significant (++/--), not applicable (n.a.)

## Author's Conclusion

"Our results make clear that there is only little evidence available in literature concerning the preferential age the first prosthesis should be prescribed in children with a congenital deficiency of the upper limb. Until now the relation between the age of the first prescription of a prosthesis and rejection rates or functional outcomes in this patient category has not been investigated properly. As such, we may conclude that all currently used guidelines concerning prosthetic prescription procedures are experience-based instead of evidence-based. The high costs associated with the prescription of upper limb prostheses make this statement very interesting and is of societal relevancy. We recommend that a randomized controlled trial should be performed to answer questions regarding at what age prostheses should be prescribed in children with congenital upper limb deficiencies. However, we realize that such a design is not easy to carry out, since only small numbers of patients are available and the follow-up time should be of considerable length. This implies that there is a need for cooperation between national and international centres dealing with paediatric prosthetic management. (*Meurs et al. 2006*)."

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