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## Reference

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# Treatment of Developmental Dysplasia of Hip With Tübingen Hip Flexion Splint

Journal of Pediatric Orthopaedics 2015, 35: 485-489.

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## Products

### Tübingen hip flexion splint

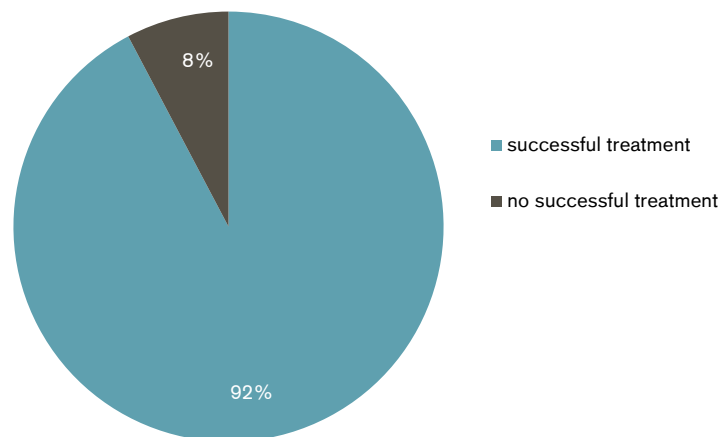
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## Major Findings

With Tübingen hip flexion splint:

- **92% of the treated dysplastic, unstable or dislocated hips were successfully converted into type 1 hips with an  $\alpha$ -angle of  $>64^\circ$  in the splint**
- **In 0.55% of hips complications were reported**
- **No statistic significant relationship between duration of therapy and time when treatment was started if treatment was started early within the first week of life**

### Amount of successful treatment of hip dysplasia with the Tübingen hip flexion splint



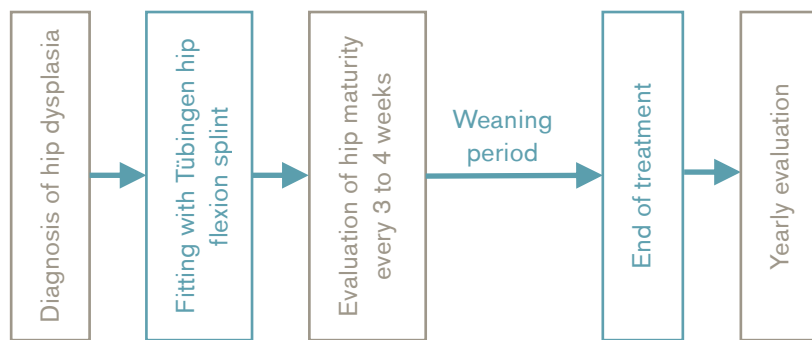
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## Population

Subjects:	351 children with 544 hips requiring treatment 248 female, 103 male
Inclusion criteria:	hip dysplasia
Hip dysplasia:	158 unilateral, 193 bilateral Type (according to Graf): IIb (355), IIc-IId (127), III (51), IV (11)

## Study Design

Retrospective study:



After fitting with the Tübingen hip flexion splint hip maturity was evaluated every 3 to 4 weeks until hip maturity was reached. Afterwards the weaning period started with in which the harness was only dressed for night time (14 hours a day) for a period of 4 to 10 weeks. Yearly follow-up evaluations were performed until skeletal maturity.

## Results

Functions and Activities						Participation
Biomechanics – Static measures	Biomechanics – Gait analysis	X-Ray	EMG	Functional tests	Clinical effects	Satisfaction

Category	Outcomes	Results for Tübingen hip flexion splint	Sig.*
Clinical effects	Classification of Graf	92.28% of the treated dysplastic, unstable or dislocated hips were successfully treated	n.a.
		0.55% of hips showed avascular necrosis	n.a.
		In 1.65% of hips reduction under general anesthesia was necessary, followed by cast for 6 weeks	n.a.
	Severin classification	Hips of patients aged over 6 years and with hip type of IIc-IIId, III or IV were evaluated	n.a.
		92.4% of hips showed good outcome (type I or II)	n.a.
		7.6% of hips showed poor outcome (type III or IV)	n.a.
	Mean age at start of treatment	39 days	n.a.
	No statistically significant relationship between duration of therapy and time when treatment was started (if treatment was started early with in the first week of life)	0	
Mean duration of treatment	3.8 months	n.a.	
Mean follow up	6.4 years	n.a.	

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

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## Author's Conclusion

“In conclusion, Tübingen harness, derived from Pavlik harness, has undergone a positive development and improvement and represents the treatment of choice in the DDH. This brace has shown a high success rate with a reduction in the incidence of short-term complications and developmental disorders of hip joint. Important factors are represented by an early age of beginning of the treatment, by its duration and by close ultrasonographic monitoring to evaluate the evolution of the condition and the possible occurrence of complications. Surgical treatment remains the last choice for patients in whom conservative treatment has failed.” (Pavone et al. 2015)

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