Deutsche
Sporthochschule Köln
German Sport University Cologne

Institute of Cardiology and Sports Medicine

Comparison of physical activity of children with congenitial heart disease and healthy peers concerning everyday school life and leisure time

E. Mauch
S. Schmitz, B. Bjarnason-Wehrens
Institute of Cardiology and Sports Medicine
German Sport University Cologne

S. Schickendantz, N. Sreeram, K. Brockmeier
Klinik und Poliklinik für Kinderkardiologie, Uniklinik Köln

Introduction

- There are only few studies with focus on the physical activity of children with congenital heart diseases (CHD)
- Especially regarding activitiy levels in children with complex lesions and high severity of the disease
- Results: markedly reduced activity levels compared to healthy peers

Introduction

- But for the majority of the affected children no restriction of physical activity and sport is recommended
  - Including: children whose heart defects were definitively corrected (e.g. patent ductus arteriosus, small atrial septal defect,…) and children who do not have symptom-limited reductions of exercise capacity

(Massin M.M. et al 2006; McCrindle, B.W. et al 2007)

Introduction

- Little is known about the physical activity in children with no or mild residual sequelae

➢ Purpose of this study was to evaluate physical activity levels of children with a wide spectrum of congenital heart diseases (CHD) and compare them to healthy peers

Methods

- 179 children, representing a wide spectrum of CHD
- 94 boys, 85 girls, mean age 10.6 ± 2.7 yrs

congenitial heart disease N = 179	diagnose	frequency		combined
		n	%	
cyanotic	transposition of the great arteries	14	7.8	3
	tetralogy of fallot	12	6.7	1
	single ventricle with pulmonary atresia	4	2.2	4
	other cardial diagnoses	11	5.2	4
	total	**41**	**22.9**	**12**
acyanotic	ventricular septal defect	31	17.3	7
	atrial septal defect	20	11.2	7
	aortic stenosis	16	8.9	6
	coarctation of the aorta	15	8.4	2
	pulmonary stenosis	9	5	2
	aortic insufficiency	6	3.4	0
	patent ductus arteriosus	5	2.8	0
	other cardial diagnoses	36	20.1	4
	total	**138**	**77.1**	**28**
total		**197**	**100**	**40**

Fig.1: Frequency of cardiac diagnoses and the number of combined diagnoses

Methods

- Control group of 179 healthy children
- 94 boys, 85 girls, mean age 10.6 ± 2.7 yrs
- Same age and gender (match paring)
- Same number of brothers and sisters

➢ Structured interview (52 questions) (Sticker E.J., Dordel S. 2002) about:

  - Social contacts
  - Leisure time activity (especially regarding physical activity, membership in sport clubs, basic motor abilities)
  - Participation in school sports

Methods

- Children with CHD were additionally distinguished
  - Degree of residual sequelae (RS) (Schickendantz S. et al 2007)
  - Method of intervention (operation respectively catheter intervention)
  - Presence of initially cyanotic or acyanotic disease
- Statistical analysis: ANOVA

degree of residual sequelae N = 179	frequency	
	n	%
A no sequelae	15	8.4
B mild (residual) sequelae	97	54.2
C relevant (residual) sequelae	57	31.8
D significant (residual) sequelae	10	5.6
total	**179**	**100**

Fig.2: Degree of residual sequelae

Results concerning leisure time physical activity

- Playing outside:
  - Children with initially cyanotic heart diseases played significantly less outside compared to the other children (p=0.027)
- Membership in sports clubs:
  - No significant difference (p=0.097) between the children with CHD (44.7%) and their healthy peers (42.5%)
- Favourite sports in sports clubs
  - Children with CHD more often participated in gymnastics, dancing, horse riding (30%) and racket games (13,8%)
  - Healthy children more often participated in team sports (42,1%) and individual sports/swimming (25%)

Results concerning leisure time physical activity

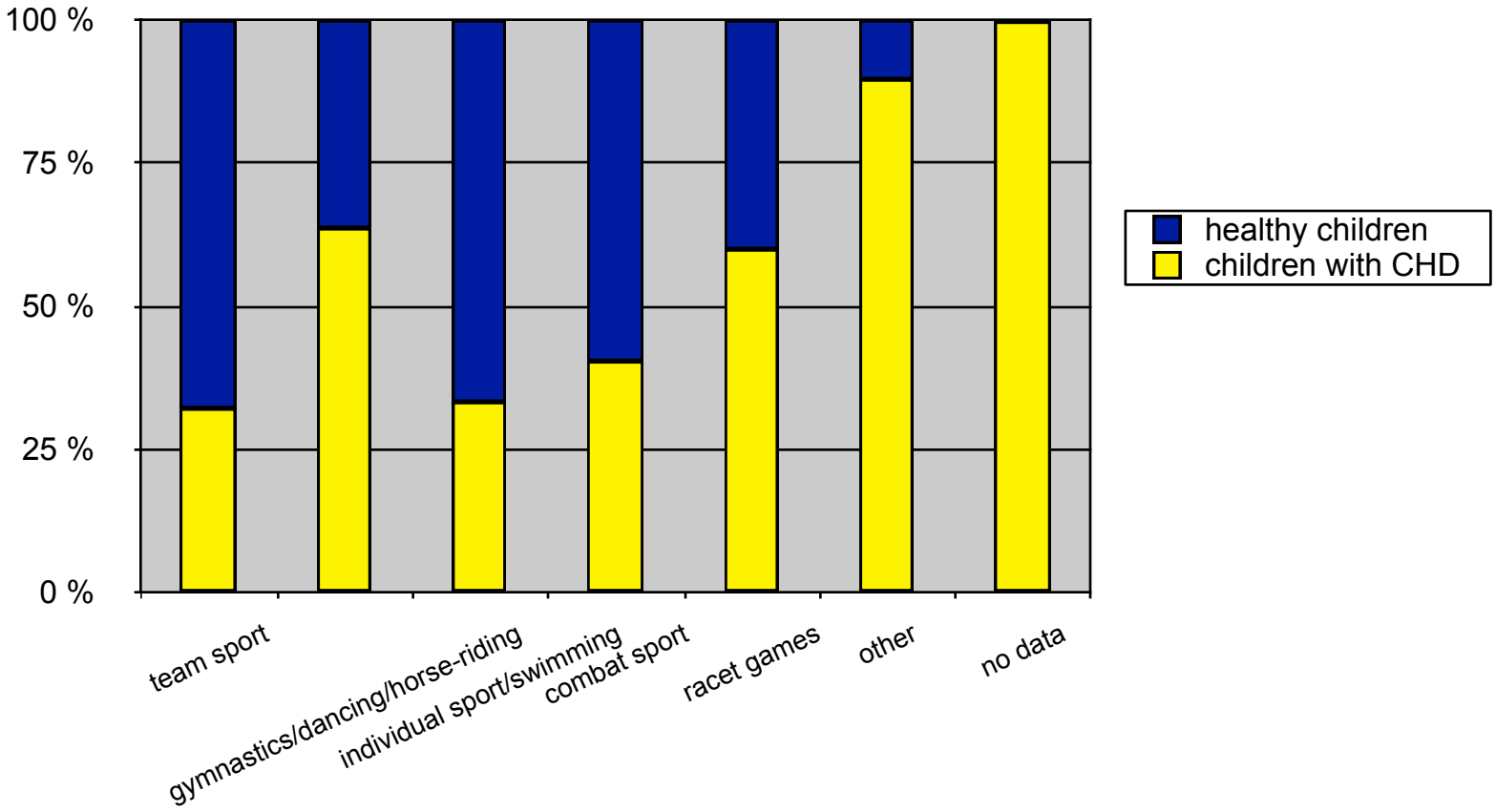

Fig.3 Sports conducted in sports clubs (n=156)

Results concerning leisure time activities

- No differences concerning the number of friends and the time spent with them (p=0,559)

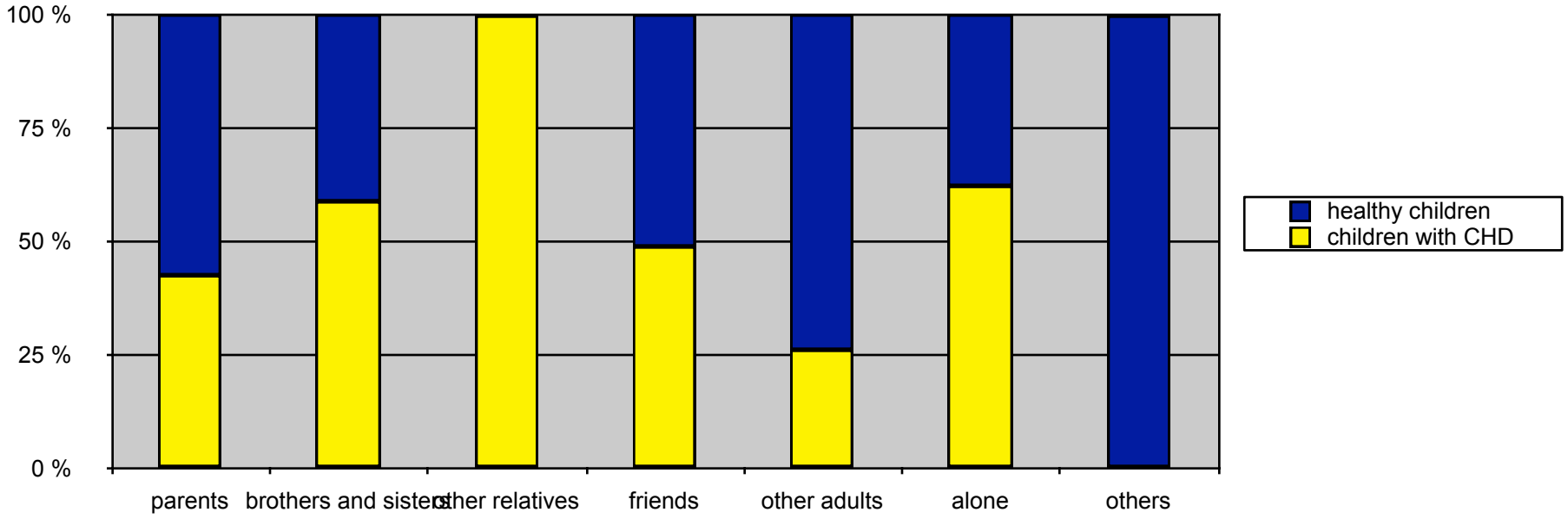

Fig.4: Favourite game partners (n=358)

Results concerning leisure time activities

- Watching TV compared to healthy peers:
  - Children with CHD were watching significantly more often (p=0.050)
  - Children with CHD were watching significantly longer (p=0.002)
- Playing videogames or gameboy:
  - No significant difference concerning the duration (p=0,346)

Results concerning school sports

- Participating school sports:
  - Children with CHD participated significantly less (p=0.001)
  - Children with CHD wanted to participate significantly less in school sports (p=0.001)
  - Children with initially cyanotic heart diseases liked to participate significantly less in school sports (p=0.034)
- Participation at sport festivals:
  - No difference concerning the frequency (p=0.482)

Results concerning motor basic skills

- Motor basic skills (bicycling, swimming, riding kickboard and rollerskate):
  - No significant differences
- Jump roping:
  - Children with CHD are significantly less able to jump rope (p=0.001)
  - Especially children with moderate RS (p=0.004), children with and without surgery/catheter intervention (p=0.010) and children with initially cyanotic heart diseases (p=0.005)

Conclusion

- The results indicate deficits in physical activity of children with CHD concerning jump roping, participation in school sports and playing outside
- The Results demonstrated differences concerning the leisure time activity watching TV and their choice of sport clubs
- No significant differences concerning membership in sport clubs and motor basic skills like bicycling, swimming, riding kickboard and rollerskate
- Results did not demonstrate influences of the residual sequelae on the leisure activities in the CHD-children group

Literature

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