Deutsche Sporthochschule Köln
German Sport University Cologne

Theresa Walz
Institute of Cardiovascular Research and Sports Medicine
German Sport University Cologne
Am Sportpark Müngersdorf 6 - 50933 Cologne
t.walz@dshs-koeln.de

Effects of a 4-week online-based dance intervention for childhood cancer survivors on selected motor abilities

Theresa Walz[1], Louisa Jung[1], Stefan Balzer[2], Volker Maas[2], Vanessa Oschwald[1], Wilhelm Bloch[1], Julia Däggelmann[1]

1 Institute of Cardiovascular Research and Sports Medicine, Department of Molecular and Cellular Sports Medicine, German Sport University, Cologne, Germany
2 Children's Hospital Amsterdamer Straße, Cologne; Clinic for Children and Youth Medicine; Department for pediatric hematology/oncology

Purpose

To compare the development of selected motor abilities of childhood cancer survivors with that of healthy peers in an online-based dance intervention.

Methods

10 children (total, age 7-20) including 6 childhood cancer survivors (patient group, mixed diagnoses) and 4 healthy children (comparison group) participated in a 4-week online-based dance intervention. Training (2x/week for 30 min via Zoom) comprised a warm-up, dance choreographies (main part) and stretching exercises. Static balance (one-leg stand), lower limb strength (5 times sit-to-stand-test), coordination under time pressure (sideway jumps) and flexibility of the ischiocrural musculature (forward bend) were investigated before and after the intervention.

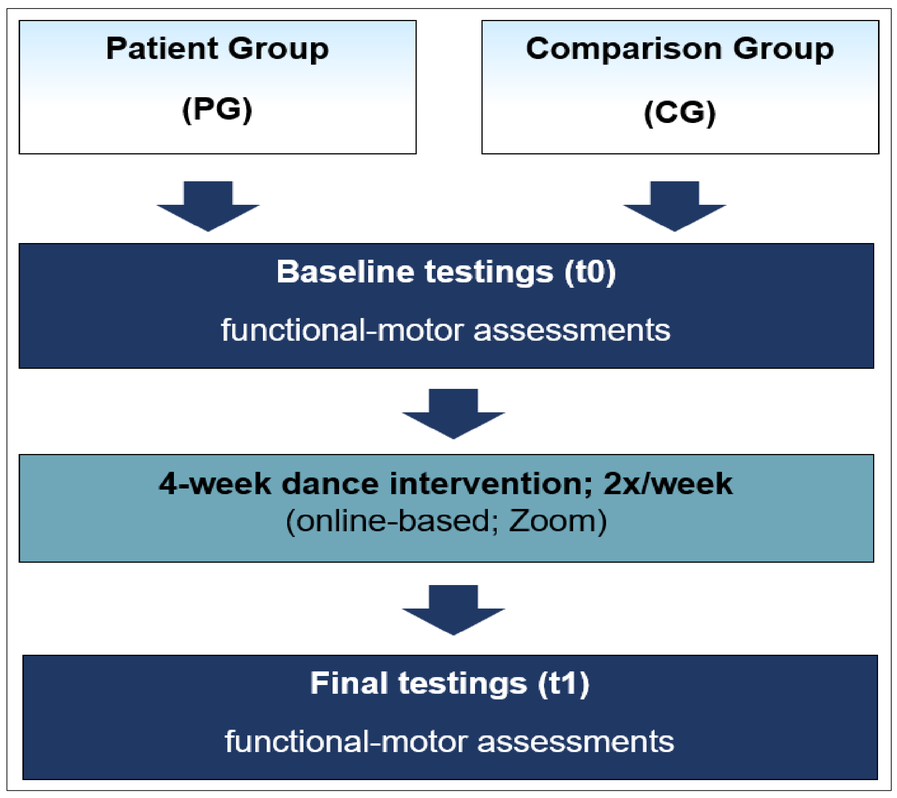

Figure 1: Study Design

Results

Table 1: Outcomes of the functional motor assessments before and after the dance intervention

Assessments		Baseline (t0) mean + SD (med)	Baseline (t0) min-max	After the intervention (t1) mean + SD (med)	After the intervention (t1) min-max	p-value
Sit to stand [Wdh./sek.]	PG	0.90 ± 0.13 (0.93)	0.72-1.05	0.91 ± 0.13 (0.95)	0.72-1.05	0.249
	CG	0.88 ± 0.16 (0.80)	0.79-1.12	0.96 ± 0.10 (0.96)	0.82-1.08	0.273
	T	0.89 ± 0.14 (0.84)	0.72-1.12	0.93 ± 0.11 (0.96)	0.72-1.08	0.139
Forward bend [cm]	PG	0.25 ± 9.59 (-1.50)	-11.00-15.00	3.42±10.87 (0.00)	-8.00-20.00	0.028*
	CG	4.75 ± 6.65 (4.50)	-3.00-13.00	6.13±7.53(4.25)	0.00-16.00	0.269
	T	2.05 ± 8.44 (1.50)	-11.00-15.00	4.50±9.30(1.25)	-8.00-20.00	0.019*
Sideway jumps [Wdh./sek.]	PG	32.33 ± 4.52 (33.75)	26.50-12.00	33.42±4.77(34.00)	27.00-40.00	0.089
	CG	34.25 ± 13.24 (35.50)	19.00-47.00	37.00±14.15(40.00)	18.50-49.50	0.144
	T	33.10 ± 8.42 (33.75)	19.00-47.00	34.85±9.10(34.25)	18.50-49.50	0.021*
One-leg stand [Wdh./sek.]	PG	2.00±1.67(2.00)	0.00-5.00	1.50±1.05(1.50)	0.00-3.00	0.257
	CG	4.75±6.95(2.00)	0.00-15.00	3.00±4.76(1.00)	0.00-10.00	0.102
	T	3.10±4.43(2.00)	0.00-15.00	2.10±2.96(1.50)	0.00-10.00	0.054

*: significant improvement (p-value ≤ 0.05); max :maximum; min: minimum; n: sample size; SD: standard deviation; PG: patient group; CG: comparison group; T = total

Discussion

The online-based dance intervention seems to have a positive impact on the motor abilities of participants. Pediatric cancer survivors may especially benefit regarding flexibility and coordination, that may be due to characteristics of dancing like e.g. changes of direction and stretching exercises. As children with cancer often suffer from restricted motor abilities caused by medical therapy and associated inactivity[1], this might be a reason for the major improvements in this group.

Conclusion

In childhood cancer survivors dancing may be a promising exercise modality to improve restricted motor abilities that are prerequisite for being active. Dancing can even be applied online-based.

References

1 Söntgerath, R. & Eckert, K. (2015). Impairments of Lower Extremity Muscle Strength and Balance in Childhood Cancer Patients and Survivors: A Systematic Review. *Pediatric hematology and oncology, 32* (8), 585-612