



## The efficacy of dance movement therapy group on improvement of quality of life: A randomized controlled trial

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### ABSTRACT

This study examines the treatment outcome of a ten weeks dance movement therapy intervention on quality of life (QOL). The multicentred study used a subject-design with pre-test, post-test, and six months follow-up test. 162 participants who suffered from stress were randomly assigned to the dance movement therapy treatment group (TG) ( $n=97$ ) and the wait-listed control group (WG) (65). The World Health Organization Quality of Life Questionnaire 100 (WHOQOL-100) and Munich Life Dimension List were used in both groups at all three measurement points. Repeated measures ANOVA revealed that dance movement therapy participants in all QOL dimensions always more than the WG. In the short term, they significantly improved in the Psychological domain ( $p > .001$ , WHOQOL;  $p > .01$ , Munich Life Dimension List), Social relations/life ( $p > .10$ , WHOQOL;  $p > .10$ , Munich Life Dimension List), Global value ( $p > .05$ , WHOQOL), Physical health ( $p > .05$ , Munich Life Dimension List), and General life ( $p > .10$ , Munich Life Dimension List). In the long term, dance movement therapy significantly enhanced the psychological domain ( $p > .05$ , WHOQOL;  $p > .05$ , Munich Life Dimension List), Spirituality ( $p > .10$ , WHOQOL), and General life ( $p > .05$ , Munich Life Dimension List). Dance movement therapy is effective in the short- and long-term to improve QOL.

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### Introduction

Dance movement therapy (DMT), also referred to as dance therapy, furthers the emotional, cognitive, physical and social integration of the individual according to the [American Dance Therapy Association \(2011\)](#). It is a form of creative body-oriented psychotherapy that uses movement and dance intervention in combination with verbal expression ([Berufsverband der TanztherapeutInnen Deutschlands, 2011](#)). Participants of DMT often report that they feel both emotionally and physically relaxed and more energetic. Does a randomized controlled trial, the 'gold standard' in evaluating healthcare intervention ([Schulz, Altman, & Moher, 2010](#)), support or disprove the hypothesis that DMT improves quality of life (QOL)? Increasing QOL reduces somatic and mental illnesses, social and sexual dysfunctions and working capacity ([Ventegodt, Omar, & Merrick, 2011](#)). This article aims to give an overview of DMT research regarding QOL improvement. A nation-wide research project, conducted in Germany, examined DMT treatment outcome with people suffering from stress

([Bräuninger, submitted for publication](#)). It was expected that DMT group participants would improve in all aspects concerning QOL, compared to a wait-listed control group (WG) who did not receive treatment. Results of this research project regarding QOL are presented and implications for further studies are discussed.

#### Quality of life research in dance and dance movement therapy

The term "quality of life" reveals a multitude of definitions and should not be confused with standard of living ([Skevington, 2002](#)). Assessing QOL depends very much on the culture ([Jafari, Ghanizadeh, Akhondzadeh, & Mohammadi, 2011](#); [WHOQOL Group, 1996](#)). The [WHOQOL Group \(1993\)](#) defines quality of life "(...) as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (p. 1) ([WHOQOL Group, 1993](#)). The overall goals in DMT are to improve QOL. Thus to evaluate QOL as treatment outcome in DMT seems relevant and crucial. As the field of DMT lacks randomized controlled trials on QOL, this article aims to expand knowledge in the profession.

Two, three-year projects evaluated DMT treatment outcome in cancer patients including QOL, amongst other variables. One study demonstrated, that DMT was an effective resource for oncology patients during and after treatment, which provided enhancement of QOL, adherence to treatment and, in remission stage, social

*Abbreviations:* DMT, dance movement therapy; QOL, quality of life; TG, treatment group (dance movement therapy); WG, wait-listed control group; WHOQOL-100, World Health Organization Quality of Life Questionnaire 100.

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recovery (Lacour, 2006). The second study presented significant results with regard to improvement in QOL, self-image, and reduction in anxiety and depression in the TG after treatment at the post-test compared to the pre-test before treatment (Mannheim & Weis, 2006). However, results of a review on randomized controlled trials on DMT for schizophrenic patients revealed almost no difference between TG and control group regarding QOL and other outcome. Though when negative symptoms were measured specifically in the post-test, TG did show significant improvement in mental state (Xia & Grant, 2010).

A randomly assigned TG demonstrated significant improvement in the QOL instrument FACT-B for breast cancer survivors (Sandel et al., 2005). These results were confirmed in a systematic review of studies that assigned a level of evidence (Bicego et al., 2009) as defined by the Centre for Evidenced Based Medicine (2009). Results of another study, a randomized controlled trial in patients with stable chronic heart failure (Belardinelli, Lacialprice, Ventrella, Volpe, & Faccenda, 2008), revealed that QOL rose in both interventions, dance and aerobic. However, the dance group improved significantly in emotional dimension measures and compliance compared to the aerobic exercise group. A randomized controlled trial (Hackney & Earhart, 2009) and a literature review (Earhart, 2009) on the benefits of dance on Parkinson disease patients suggested that dance improved QOL in Parkinson disease. Mind-body therapies were evaluated in two other projects after a one week course intervention: results demonstrated a significant improvement in health-related QOL in the pre-, post-test within group comparison, respectively in comparing the study group to a control group (Fernros, Furhoff, & Wändell, 2005, 2009).

To summarize, previous studies demonstrated that DMT and dance interventions significantly improved QOL in patients with cancer, Parkinson's disease and chronic heart failure. The research question of this study was: Can DMT increase QOL in people suffering from stress, when the TG is compared to a WG condition that receives no intervention?

### Hypotheses

1. Quality of life improves in treatment group (TG) from pre-test at t1 to post-test at t2 (after the treatment) as an effect of DMT: Within-group (time).
2. Results of the third test at t3 (six months follow-up-test after t2) in the dance movement therapy intervention group are better than results at the pre-test t1: Within-group (time).
3. The results at t2 are better in the dance movement therapy intervention compared to the wait-listed control group: Between-group (time × condition).
4. The effects at t3, six months follow-up-test, on the dance movement therapy group remains or may fall slightly, but these results are in any case better compared to the wait-listed control group: Between-group (time × condition).

### Method

#### Participants and procedure

The study was approved by the Ethics Committee of the University of Tübingen, Germany, and was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki. All participants signed informed consent form before participating in the study. Code sheets on questionnaires made it impossible to disclose participants' identity.

Seventeen dance therapists from Germany were recruited in two runs through announcements on the DMT newsletter of the German Dance Therapy Association (BTD) and a BTD annual

**Table 1**  
Number of participants in each location.

Location	Total, n	DMT TG, n	WG, n
Sindelfingen	15	8	7
Hamburg	16	8	8
Freiburg	16	9	3
Freiburg		4	–
Schorndorf	12	9	3
Stuttgart	10	10	–
Tübingen	17	10	7
Neuss	17	8	9
Köln	19	9	10
Lübeck	15	7	8
Korbach	8	8	–
Leipzig	17	7	10
Total	162	97	65

n: number of participants.

meeting. Included were dance therapists who completed their DMT training, worked in private practice, and had experience conducting DMT groups. All dance therapists accepted the methodological framework of the study. The DMT groups stopped after the 10-session intervention and did not continue during the six-month follow-up period. Exclusion criteria for therapists were incomplete training, lack of experience in leading groups and private practice, and non-agreement to randomization of participants. Six therapists dropped out before the study started due to organizational difficulties. Eleven dance therapists (ten women, one man) participated in the study in eleven different locations (see Table 1).

Dance movement therapists recruited participants on site mainly through a press release. One therapist recruited the TG within a large company through the internal information system; another gave a radio interview. Additionally, some therapists advertised in health centres and doctors' practices. Inclusion criteria were that participants suffer from stress, willing to participate in a 10-session DMT treatment group, and complete questionnaires at three different measure points. They had to agree to be randomly assigned to either a treatment or a wait-listed control group, and sign the informed consent form. Exclusion criteria were currently psychological, psychotherapeutic and/or medical treatment on an outpatient or inpatient basis, psychotherapy treatment carried out within the previous 12 months, diagnosis of psychiatric illness, serious physical disability or limitation, or absence of signed informed consent form. At post-test and follow-up test, all participants of TG and WG were asked if they had started other therapies (a positive answer would have resulted in exclusion of data).

Interested people were invited to take part in the study if they suffered from stress at workplace for example, before exams, in relationships, or due to loneliness, relocation, retirement, separation, divorce, or loss of a loved one. In the written information, it was mentioned that stressful events could affect quality of life; a study by the psychology department of the University of Tübingen, Germany would therefore validate if DMT could be an effective treatment to reduce stress and improve quality of life. As DMT would be related to movement, dance, and creativity, it would enhance psychotherapeutic insights into favourable stress patterns and be fun.

Interested participants spoke on the phone to the local dance movement therapist and learned about the conditions for their participation (inclusion and exclusion criteria, group therapy fees, refund of 1/5 of the fees upon completion of all three tests). In total, N = 162 people suffering from stress signed informed consent forms and were randomly assigned to 12 DMT treatment groups (n = 97) and nine wait-listed control groups (n = 65): In three cities the number of participants were too small for randomization.

**Table 2**  
Variables in the overall Study.

Independent variables	Moderating variables	Dependent variables	
		Objective data t2, t3	Subjective data t1, t2, t3
	t1, t2, t3		
DMT TG versus WG	Demographic data - Suggestibility/imagination ability (imagination test) - General self-efficacy (GSE)	Other therapies	Stress - Stress management (SVF 120) - Psychological distress and psychopathology (BSI)
			Quality of life - WHOQOL-100 - MLDL

Results regarding stress are presented in Bräuninger (submitted for publication).

### *Randomization and briefing of dance movement therapy participants*

The author randomly assigned participants into TG and WG by lottery, in order to avoid possible bias of the respective dance therapist. For the classification of the author's own TG and WG, another dance therapist conducted the randomization. Participants were informed upon their group assignment into TG or WG by their dance movement therapist. For the briefing (one week before the TG started) they were separately invited as TG or WG and were informed that codes for the questionnaires would guarantee confidentiality and anonymity, and dance movement therapists could not access any personal data disclosed in questionnaires. Furthermore, using a code should avoid social desirability in responses. For ethical reasons, WG received the option of a 10-session TG after completion of all three tests (about nine months after the pre-test at t1).

### *Measures*

Two standardized questionnaires on QOL were used at all three measure points to receive stronger results in similar subscales. Table 2 gives an overview on the different types of variables.

#### *WHOQOL-100: World Health Organization Quality of Life Questionnaire*

The World Health Organization Quality Of Life-100/WHOQOL-100 questionnaire (Angermeyer, Kilian, & Matschinger, 2000) contains a total of 100 items and is composed of six domains, 28 facet structures with mostly four items, and the assessment of general QOL and health, which allows an assessment of subjective quality of life and health. The answers are given on a five-point scale with 1 = "not applicable/never" to 5 = "applies completely/always." Domain I measures Physical parameters, Domain II Psychological parameters, Domain III Independence of a person, Domain IV Social relationships, Domain V Impact of the environment on QOL, and Domain VI Spirituality/Religion/Beliefs. Internal consistency (Cronbach's alpha) of subscales of the WHOQOL-100 lies between  $\alpha = .59$  and  $.91$  it distinguishes very well between healthy persons and persons with limitations in health and physical or mental illness. There are age graded reference values for the age group 18–85 years.

#### *MLDL: Münchner Lebensdimensionsliste [Munich Life Dimension List]*

The Munich Life Dimension List (Heinisch, Ludwig, & Bullinger, 1991), a 19-item questionnaire, evaluates personal life satisfaction and raises current life satisfaction in four areas: subscale Physis, Psyche, Social life, and Everyday life. The additional item (20) Life in general (total) is allocated to any scale. The QOL in the last 7 days is gained by an eleven-stage Likert-scale response, from 0 = "could not be worse" to 10 = "could not be better". Internal reliability is satisfactory (between  $.64$  and  $.80$ ), except for the Everyday life

scale. Validity values are available through the comparison (*t*-test) of healthy and hypertensive heart disease patients (discriminate validity). Standard values are available for groups parallelized by sex and age of 100 healthy subjects and 144 hypertensive heart patients.

### *Design*

This randomized controlled trial is multicentred and applied a between subject-design and a mixed methods approach: QOL results are reported here, results regarding stress treatment are forthcoming (Bräuninger, submitted for publication); other parts of the study regarding the qualitative design have been published (Bräuninger, 2006a, 2006b, 2006c). The study compares two groups, a DMT TG with a wait-listed control group WG. The TG received a 90 min DMT group intervention per week over a period of 10 sessions. The WG received no treatment and was inactive. Measure times were at baseline t1, after 10 sessions DMT group intervention at t2 (for short term treatment effects) and six months after termination of the group treatment at t3 (for long term treatment effects). Most of the 162 participants were recruited via news lets in local newspapers, some via flyers and a radio interview, and randomly assigned to twelve TG ( $n = 95$ ) and nine WG ( $n = 67$ ). Participants filled out standardized questionnaires at all three measure points. The intention of this randomized controlled trial intervention was to validate the short-term and long-term treatment outcome effect of DMT on the improvement of QOL.

Experienced dance movement therapists led the groups. Therapists had the freedom to conduct the groups in whatever way they thought was best for the groups' needs. Though they did not follow a protocol, they were, however, asked to fill out two intervention checklists after each of the ten sessions to capture interventions which they introduced to the whole group and to each group member (Bräuninger, 2006a, 2006b, 2006c). Therapists applied different DMT approaches, methods, and techniques. A correlational analysis between dance movement therapy interventions and results from the standardized questionnaires on QOL and stress treatment was conducted to capture more and less successful DMT interventions (Bräuninger, in preparation).

### *Data analysis*

Thirteen people were excluded from statistical analysis: Two from the WG who filled out the questionnaires only once, and eleven from the TG who attended the DMT sessions less than five times. Analysis of variance (ANOVA) with repeated measures design was calculated for each subscale and domain of the questionnaires (repeated measures: measuring time t1  $\times$  measuring time t2, respectively measuring time t1  $\times$  measuring time t3). The mean of the TG, the WG, the overall average, and the interaction in

**Table 3**  
Demographic data of participants.

	All participants		DMT TG		WG	
	n	%	n	%	n	%
Total	162	100	97	59.9	65	40.1
Gender						
Female	147	90.7	88	90.7	59	90.8
Male	15	9.3	9	9.3	6	9.2
Age						
M	44		44		44	
SD	9		9		9	
Minimum/maximum	16/65		16/65		26/62	
School						
No school-leaving certificate	0	0	0	0	0	0
Secondary school	16	9.9	9	9.3	7	10.8
Junior high school	29	17.9	16	16.5	13	20.0
Technical college entrance level	15	9.3	8	8.2	7	10.8
High school A level	16	9.9	9	9.3	7	10.8
BA/BS degree	36	22.2	25	25.8	11	16.9
MA/MS degree	48	29.6	30	30.9	18	27.7
Postgraduate/PhD degree, etc.	2	1.2	0	0	2	3.1
Marital						
1 single	43	26.5	26	26.8	17	26.2
2 married	68	42	39	40.2	29	44.6
3 living with partner	23	14.2	10	10.3	13	20.0
4 living separated	8	4.9	8	8.2	0	.0
5 divorced	15	9.3	9	9.3	6	9.2
6 widowed	0	.0	0	.0	0	.0
7 (1+5)	1	.6	1	1.0	0	.0
8 (3+5)	2	1.2	2	2.1	0	.0
9 (2+3)	1	.6	1	1.0	0	.0
10 (4+5)	1	.6	1	1.0	0	.0
Health at t1						
1 very bad	0	.0	0	0.0	0	0.0
2 bad	19	11.7	11	11.3	8	12.3
3 moderate	53	32.7	35	36.1	18	27.7
4 well	67	41.4	39	40.2	28	43.1
5 very well	17	10.5	11	11.3	6	9.2
Non valid	6	3.7	1	1.0	4	6.1

n = number of participants; t1 = pre-test.

- Within-group (time): Measure point t1 (pre-test) and t2 (post-test), respectively t1 (pre-test) and t3 (six-month follow-up-test),
- Between-group (time × dance movement therapy intervention): in TG and WG and main effect of factors time (t1 and t2, respectively t1 and t3) were calculated.

The measure points t1 and t2 respectively t1 and t3 were compared in Greenhouse Geisserscher tests. All statistical tests that measured the efficacy of DMT were performed with a significance level at  $p < 10 =$  significant (\*) and  $p$  performed  $< .05 =$  highly significant (\*\*).

At t1, no difference between TG and WG was expected. At t2, however, results in TG would be better than in WG. The crucial test for the hypothesis was the interaction between the two factors: It was expected, with regard to the tests t2 and t3, that the main effect of group affiliation would be significant. That however should not be true at t1, since the group allocation was random.

The important test for short-term effects of DMT treatment was the interaction between group affiliation and measure point at t1 and t2, because at t2, the TG already had treatment nearly completed (9 out of 10h). The crucial test of the long-term effects of DMT treatment, however, was the between-group interaction (time × dance movement therapy intervention) and time (t1 - t3). Treatment effect at t3 was expected to be still strong, but much weaker than in t2. Therefore, analysis of variance with measure points t1 and t3 on the measurement repetition factor was expected to be less likely revealing a significant interaction as those with the measure points at t1 and t2.

## Results

### Demographic data of participants

Demographic data of the participants of the two groups are shown in Table 3.

TG and WG did not differ at baseline with the exception of two sub-items regarding marital status: 10% in the TG lived with partners and 20% in the WG, and 8.2% in the TG lived separate but 0% in the WG.

### Short- and long-term effects of dance movement therapy on quality of life

#### Results WHOQOL-100

The results show the six domains of the WHOQOL-100 (Angermeyer et al., 2000) and additionally, the Global value. The domain of values results were gained from the facets of the 100 items (with a 5-point scale, from 1 = "not at all true" to 5 = "completely true", though the statements may vary slightly according to domain): For the 24 facets, in which the 100 items of WHOQOL-100 were contained, the respective average of the per facet related items were calculated and transformed by multiplying by the value of 4 in a value range from 4 to 20. It was thus possible to compare the facet and domain values to each other. Only those cases that lacked maximum one item per facet were counted.

To compare facet and domain values of the WHOQOL-100 with the Munich Life Dimension List, a further transformation into a range of values from 0 to 100 was made. These transformed



**Table 4**  
Mean (*M*) and standard deviation (*SD*) of WHOQOL 100 domains at t1 (pre-test), t2 (post-test after the intervention) and t3 (6-months follow-up test). Main effect of factors time and interaction between-groups × measuring point.

WHOQOL-100 t1 . t2 (pre-post comparison)	Group	N	t1: pre-test M (SD)	t2: post-test M (SD)	Measuring point		Time × Group	
					t1 .t2	F	t1 .t2	F
Domain 1: Physical health	TG	84	56.52 (14.35)	64.41 (14.99)	(1,136)= 32.62 <i>p</i> < .001***		(1,136)= 1.43 n.s.	
	WG	54	55.99 (16.79)	61.15 (16.92)				
Domain 2: Psychological	TG	84	56.19 (14.80)	63.07 (14.79)	(1,135)= 23.61 <i>p</i> < .001***		(1,135)= 14.18 <i>p</i> < .001***	
	WG	53	57.29 (15.01)	58.16 (15.17)				
Domain 3: Level of independence	TG	84	75.44 (15.68)	80.31 (13.48)	(1,135)= 15.91 <i>p</i> < .001***		(1,135)= .58 n.s.	
	WG	54	73.21 (16.04)	76.52 (15.80)				
Domain 4: Social relations	TG	84	55.89 (15.68)	59.52 (16.50)	(1,135)= 5.12 <i>p</i> < .05**		(1,135)= 2.86 <i>p</i> < .10*	
	WG	53	57.80 (15.76)	58.32 (14.78)				
Domain 5: Environment	TG	84	71.84 (11.44)	73.53 (11.29)	(1,136)= 6.78 <i>p</i> < .05**		(1,136)= .48 n.s.	
	WG	54	70.17 (9.96)	71.15 (9.26)				
Domain 6: Spirituality/religion/personal beliefs	TG	83	67.57 (23.45)	69.88 (20.47)	(1,134)= .36 n.s.		(1,134)= 1.20 n.s.	
	WG	53	68.28 (19.38)	67.61 (19.90)				
Global value	TG	83	58.48 (16.86)	62.40 (16.48)	(1,135)= 1.87 n.s.		(1,135)= 5.10 <i>p</i> < .05**	
	WG	54	57.99 (16.13)	57.02 (16.46)				
t1 . t3 (Pre Test–6-months follow-up comparison)	Group	N	t1: pre-test M (SD)	t3: 6-months follow up M (SD)	Measuring point t1 .t3 F		Time × Group F	
Domain 1: Physical health	TG	76	57.32 (13.90)	65.54 (14.96)	(1,123)= 40.11 <i>p</i> < .001***		(1,123)= .13 n.s.	
	WG	49	56.52 (15.55)	63.86 (16.96)				
Domain 2: Psychological	TG	76	56.24 (14.48)	62.14 (14.17)	(1,122)= 7.96 <i>p</i> < .01**		(1,122)= 6.91 <i>p</i> < .05**	
	WG	48	58.59 (13.71)	58.80 (16.21)				
Domain 3: Level of independence	TG	76	76.30 (14.97)	80.31 (13.09)	(1,122)= 10.35 <i>p</i> < .005***		(1,122)= .29 n.s.	
	WG	48	74.35 (16.06)	77.21 (16.59)				
Domain 4: Social relations	TG	76	56.76 (16.68)	58.72 (16.72)	(1,123)= 1.34 n.s.		(1,123)= .37 n.s.	
	WG	49	58.48 (14.74)	59.08 (17.60)				
Domain 5: Environment	TG	75	72.53 (10.27)	73.64 (10.99)	(1,122)= 1.31 n.s.		(1,122)= .21 n.s.	
	WG	49	70.55 (10.42)	71.03 (11.34)				
Domain 6: Spirituality/religion/personal beliefs	TG	75	67.19 (24.26)	70.42 (18.84)	(1,121)= .22 n.s.		(1,121)= 2.82 <i>p</i> < .10*	
	WG	48	71.35 (18.36)	69.53 (20.45)				
Global value	TG	76	59.07 (16.68)	63.90 (15.12)	(1,123)= 9.91		(1,123)= .81	

n.s.: non significant; TG: dance movement therapy intervention group; WG: wait-listed control group.

values are presented in the following as results for all domains 1–6 (Physical health, Psychological, Level of independence, Social relations, Environment, Spirituality/religion/personal beliefs), and for the Global value. For the formation of facets and domain values of the WHOQOL questionnaire, the CD-ROM accompanying statistics program was used. Table 4 presents short- and long-term results of the WHOQOL-100.

The average values of the treatment group improved in all six domains and in the Global value. This was always true from t1 to t2 (comparison between pre- and post-test) and t1 to t3 (comparison between pre-test and six-months-follow-up-test). The averages of the treatment group improved more than those of the wait-listed-control group. A short-term statistically significant effect is three times evident in the TG with the improvement of Psychological parameters, Social relations, and the Global value. On the long-term, the mean values of Psychological parameters and Spirituality/Religion increase significantly in the TG.

In the ANOVA, the interaction between group affiliation and measure point shows short and long term effects. The results of the effect of DMT to improve the quality of life can clearly be confirmed.

#### Results MLDL

The changes on the quality of life Munich Life Dimension List (Heinisch et al., 1991) record one's personal life satisfaction. It is obtained on a numeric eleven Likert-response scale (from 0 = "could not be worse" to 10 = "could not be better"). Results of the 19 items are represented by results of its four subscales Physis, Psyche, Social life and Daily life. The result of the additional item (20) "General life" (Total value) that is not assigned to any scale will be individually listed. For the four subscales, the value of each subscale is built by the respective arithmetic mean of the corresponding sum value per subscale.

Table 5 presents short- and long-term results in relation to the Munich Life Dimension List QOL (main effect time of measurement and interaction between group affiliation and time of measurement).

The short-term results of the TG compared to the WG become significant in three (out of four) subscales Physis, Psyche, Social life, and in the additional item "General life". The long-term results in the TG compared to the WG improve significantly in the subscale Psyche and in the additional item "General life". The averages of the DMTTG are always better in the pre-post comparison. However, the averages of the WG deteriorate three times in pre-post comparison, and stay on the same level one time. In four out of five cases, the average improves in the TG in comparison from t1 to t3, whereas the average of the WG deteriorates three times and stagnates one time in comparison from t1 to t3.

#### Summary of quality of life results

The results of the DMT group are in all dimensions and are clearly better than the WG. In the short-term, DMT significantly improved in the Psychological domain (*p* > .001, WHOQOL; *p* > .01, Munich Life Dimension List), Social relations/life (*p* > .10, WHOQOL; *p* > .10, Munich Life Dimension List), Global value (*p* > .05, WHOQOL), Physis (or Physical health) (*p* > .05, Munich Life Dimension List), and General life (*p* > .10, Munich Life Dimension List). In the long-term, DMT significantly enhanced the Psychological domain (*p* > .05, WHOQOL; *p* > .05, Munich Life Dimension List), Spirituality (*p* > .10, WHOQOL), and General life (*p* > .05, Munich Life Dimension List). The hypothesis, that there is a positive relationship between short- and long-term improvement of QOL and DMT treatment, could be confirmed by the analysis of the dependent variables of the two QOL instruments.

Results on DMT interventions revealed that parallels in the group processes could be discovered (Bräuninger, 2006b), though

**Table 5**

Mean (*M*) and standard deviation (*SD*) of Munich Life Dimension List Subscales at t1 (before the intervention), at t2 (after the intervention: short term effect) and at t3 (6-months follow-up test: long-term effects). Main effect of time and interaction Between-Groups × Measuring Point.

Munich Life Dimension list	t1 – t2 (pre–post comparison)	Group	N	t1: Pre-test <i>M</i> ( <i>SD</i> )	t2: Post-test <i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	Measuring point t1_t2 <i>F</i>	Group × Time t1_t2 <i>F</i>
Subscale: Physis		TG	83	6.29 (2.02)	6.80 (1.94)	(1,135) = 1.00	(1,135) = 5.36	
		WG	54	6.15 (1.67)	5.95 (1.79)	n.s.	<i>p</i> < .05**	
Subscale: Psyche		TG	83	5.21 (2.11)	6.16 (2.04)	(1,135) = 9.95	(1,135) = 7.95	
		WG	53	5.23 (1.82)	5.29 (1.94)	<i>p</i> < .005***	<i>p</i> < .01**	
Subscale: Social Life		TG	83	5.12 (2.22)	5.54 (2.35)	(1,135) = .49	(1,135) = 3.87	
		WG	54	5.51 (2.10)	5.31 (2.01)	n.s.	<i>p</i> < .10*	
Subscale: Daily Life		TG	83	6.73 (1.74)	7.04 (1.80)	(1,135) = 3.34	(1,135) = .05	
		WG	53	6.59 (1.49)	7.00 (2.92)	<i>p</i> < .10*	n.s.	
Item 20: General Life		TG	82	5.98 (2.82)	6.60 (2.18)	(1,134) = 2.33	(1,134) = 3.77	
		WG	54	5.98 (2.13)	5.91 (2.17)	n.s.	<i>p</i> < .10*	
t1 – t3 (Pre–6-months follow-up comparison)		Group	N	t1: Pre-test <i>M</i> ( <i>SD</i> )	t3: 6-months follow up <i>M</i> ( <i>SD</i> )	Measuring point t1_t3 <i>F</i>	Time × Group t1_t3 <i>F</i>	
Subscale: Physis		TG	74	6.43 (1.93)	6.75 (1.75)	(1,121) = 3.70	(1,121) = .01	
		WG	49	6.11 (1.77)	6.40 (2.19)	<i>p</i> < .10*	n.s.	
Subscale: Psyche		TG	74	5.27 (2.11)	6.08 (1.92)	(1,121) = 6.91	(1,121) = 5.86	
		WG	49	5.25 (1.86)	5.29 (2.16)	<i>p</i> < .05**	<i>p</i> < .05**	
Subscale: Social Life		TG	84	5.26 (2.30)	5.65 (2.16)	(1,121) = 1.09	(1,121) = 2.41	
		WG	54	5.54 (2.05)	5.47 (2.26)	n.s.	n.s.	
Subscale: Daily Life		TG	74	6.84 (1.69)	6.80 (1.83)	(1,121) = .49	(1,121) = .17	
		WG	49	6.60 (1.56)	6.45 (1.97)	n.s.	n.s.	
Item 20: General Life		TG	73	6.05 (2.25)	6.82 (2.00)	(1,120) = 2.97	(1,120) = 6.32	
		WG	49	6.14 (2.15)	6.00 (2.36)	<i>p</i> < .10*	<i>p</i> < .05**	

n.s.: non significant; TG: dance movement therapy treatment group; WG: wait-listed control group.

therapists' treatment modalities were very different (Bräuninger, 2006c). Some DMT interventions, techniques, and approaches showed more significant correlations with the improvement of QOL than others. This gives reason to the presumption that some DMT interventions and techniques are more successful to improve quality of life whereas others should be avoided (Bräuninger, in preparation).

## Discussion

Intervention studies on the effect of DMT on QOL often have methodological limitations, such as lack of allocation of participants by randomization, lack of control groups, different treatment lengths and lack of follow-up-tests. The aim of this study was to evaluate the short-term and long-term effect of DMT on QOL, thereby expanding the knowledge in the field by means of conducting a randomized controlled trial.

DMT clients often expect treatment to improve their QOL. The aim of this study was to assess if DMT in the short- and long-term improves QOL and DMT TG group shows better results than the WG. These hypotheses have clearly been confirmed. External validity was ensured by the multicentred nature of this study with different groups all over Germany.

### *Dance movement therapy significantly improves QOL in the short and long term*

The first hypothesis states that DMT improves QOL from pre-test t1 to post-test t2. This hypothesis is fully confirmed as Physical health, Psychological domain, Social relations/life, Global value and General life significantly improved in the TG strengthening results from previous DMT reviews (Xia & Grant, 2010), DMT studies (Lacour, 2006; Mannheim & Weis, 2006), dance studies (Belardinelli et al., 2008; Bicego et al., 2009; Earhart, 2009; Hackney & Earhart, 2009; Sandel et al., 2005), and studies on mind-body-therapy (Fernros et al., 2005, 2009). The findings also confirm results of other DMT studies that reported significant effects on increase in social interaction and competence (Berrol, Ooi, & Katz, 1997; Rossberg-Gempton, Dickinson, & Poole, 1999).

The second hypothesis states that the results of the six-month follow-up-test at t3 in the TG are better than the first pre-test at t1. Again, this hypothesis has been confirmed, as QOL values in the TG always improved in the long run and three times significantly.

### *Dance movement therapy is significantly better than non-treatment*

The third hypothesis states that results of the post-test will be better in the TG than in the WG: The third hypothesis with regard to the improvement of QOL is fully confirmed, since QOL always improves in the TG from pre-test t1 to post-test t2. These results confirm other findings on treatment outcome of DMT with a pre-, post-test comparison between TG and control group (Berrol et al., 1997; Brooks & Stark, 1989; Cruz & Sabers, 1998; Ritter & Low, 1996; Rossberg-Gempton et al., 1999).

The fourth hypothesis states that the effect can still be sustained in the TG after discontinuation of DMT, thus in the six-month follow-up-test t3, and will eventually fall off. The treatment outcome will in the case be better than the wait-list control. The fourth hypothesis can be stated as confirmed: The values of the WHOQOL-100 always improved in the long-term in the TG and always more than in the WG. Thus, the present study provides crucial evidence for long-term treatment outcome effects of DMT on QOL. This result seems to be of particular importance since follow-up studies on long-term effects of DMT on QOL have not been conducted previously.

Can we identify successful DMT interventions that improve quality of life? And are there DMT interventions that we should avoid? The overall study tested these questions: Dance therapists filled out two intervention checklists after each of the ten DMT sessions: The intervention checklist 1 checked for individual interventions regarding each client. For example the therapist was asked if she had applied dance techniques (improvisation, composition, exercises), dance therapy interventions (synchronization, expression, association), non-DMT interventions, etc. The therapists were asked to fill out group interventions in the intervention checklist 2, for example which DMT approach they used (Chace model, Authentic movement, Integrative dance therapy, etc.), which leading style they applied, what the structure of the session was, and

more. A correlation analysis was conducted with WHO domains, MLDL subscales, individual items, and the intervention checklists to assess positive and negative relationships between DMT interventions and QOL improvement. Results revealed significant positive and negative correlations between DMT interventions and QOL improvement. The presentation of these results would be beyond the scope of this article and a summary wouldn't do justice to the richness of findings. Detailed results and a discussion on DMT interventions on QOL improvement are forthcoming (Bräuninger, in preparation).

Dance movement therapy improved psychological well-being and General life in the short and long term. Following Marian Chace (Chaiklin & Schmais, 1993), we tell clients nonverbally 'I see you, I hear you, I understand you, and it is ok'. This notion can be crucial and impact clients' psyche and change their attitude towards life in general. In the short term DMT significantly improved Physical health. Dance as a DMT intervention encourages people's sense of physical self and positively affects clients' fitness. The DMT group experience might be responsible for the positive short-term effects on social relations and Global value. Group participants learn from each other and experience group cohesion through rhythmic interaction (Schmais, 1991). Through dance, solutions for everyday life are sought and found (Hanna, 1988). The dance in DMT makes it possible to create, symbolize, perform, and transcend. This possibility particular to DMT satisfies a deep need of people in search for meaning, as seen in the long term improvement of spirituality.

#### Limitations of the present study

The majority (91%) of participants were women between the ages of 16 and 65 years. Results therefore apply to a mainly female population of that age range and cannot be generalized. It would be interesting to see if a mainly male group would gain the same effects.

A methodological limitation of the study might be that 9 out of 12 treatment groups had no wait-listed controlled group and consequently randomization in three groups was not possible. It would have been interesting to compare TG and WG to a second treatment or placebo group as control. Gender related differences were not examined due to the small sample size of 15 (9%) participating men. Participants had to pay for the treatment but got a discount after the completion of the study. That might have caused a possible bias as individuals wishing to participate would be unable to afford the therapy and thus be excluded.

#### Conclusions

The aim of this multicentred randomized controlled trial was to examine the effect of DMT treatment on improvement of QOL in the short-term and long-term. The results indicate that DMT is a successful method for improving QOL. DMT has proved to be in all areas more successful than non-treatment and appears in many dimensions significantly more effective compared to the wait-listed control group. These findings seem relevant for the further targeted DMT treatment in terms of improving QOL. In medical field QOL is regarded as an important objective criterion for evaluating medical interventions (Schulz et al., 2010; Steinbüchel, Bullinger, & Kirchberger, 1996). Results of this study suggest that QOL can also be a valid outcome of DMT intervention.

Short-term 10 DMT group sessions seem to be an effective treatment to improve quality of life. This result is enlightening, especially as the application of DMT has hardly been discussed as a short-term therapy.

Another interesting notion is the example of the possibility of quantitative studies in DMT, especially as, internationally, there

is widespread opinion amongst DMT that quantitative methods cannot measure the effects of DMT. Judging from the concept of body–mind–spirit unity, positive results of this study are not surprising, as changes through DMT should be detected through standardized psychological questionnaires, and thus through quantitative methods. This study aimed to ascertain randomized controlled trials in DMT.

#### Future prospective

Comparative randomized controlled trials could verify whether DMT improves QOL in clinically relevant areas such as oncology, AIDS treatment and other somatic areas. In oncology treatment, positive results regarding QOL through DMT (Mannheim & Weis, 2006) justify further investigation in this area. The question arises as to whether it is possible to achieve the positive results of this randomized controlled trial also with other major diseases. Here too, further studies may clarify this question.

Future studies could use a research design with several groups – a DMT group and two active controls (for example a psychotherapy group and another body-oriented therapy), and multiple time points (pre-, post-test, and follow-up tests after 6, 12 and 24 months), thereby examining and differentiating specific DMT effects from non specific factors, and verifying long-term effects over one and two years. Also, it seems worthwhile to extend the scope to selected clinical populations, as this study is limited to outpatients. It could also be interesting to examine the effect the length of therapy (number of sessions, frequency, etc.) plays on improvement of QOL.

The results of this study demonstrated that short-term DMT could achieve very successful short-term and long-term results. The knowledge thus gained from this study could help to use and apply DMT more specifically in fostering QOL.

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