

Universities & Colleges

Ballroom and/or Folk-dance Courses

In this area:

- Wichita State University (Note: one may have to put “Dance” into the subject box to find applicable courses): <https://ssbprod.wichita.edu/StudentRegistrationSsb/ssb/classSearch/classSearch>
- University of Missouri-Kansas City: <https://catalog.umkc.edu/course-offerings/undergraduate/dance/>

Across the nation:

- California Polytechnic State University: <https://catalog.calpoly.edu/coursesaz/danc/>
- Brigham Young University: <https://catalog.byu.edu/fine-arts-and-communications/dance/western-square-and-traditional-american-dance-beginning>
- University of Texas at Austin: <https://education.utexas.edu/departments/kinesiology-health-education/affiliated-programs/division-physical-education/courses>
- Stanford University: <https://explorecourses.stanford.edu/search?q=DANCE&view=catalog&academicYear=&filter-departmentcode-DANCE=on&page=1&filter-coursestatus-Active=on&filter-catalognumber-DANCE=on&collapse=>
- Harvard University: <https://ofa.fas.harvard.edu/dance-non-credit-classes>
- Utah Valley University: <https://www.uvu.edu/catalog/current/departments/dance/dance-ballroom-dance-emphasis-bs/>
- University of Georgia: <https://www.dance.uga.edu/courses/all>
- Adelphi University: https://events.adelphi.edu/au_event/non-credit-ballroom-dancing-class/
- University of Hawaii at Manoa: <https://manoa.hawaii.edu/catalog/courses/dnce-142-ballroom-dance-1/>
- University of Utah: https://continue.utah.edu/noncredit/class/essf_740_ballroom_dancing_elementary_american
- Kentucky State University: <https://kysu.edu/the-institute-of-life-long-learning-ballroom-and-rhythm-dance/>
- University of Wisconsin-Madison: <https://dance.wisc.edu/dance/academics/courses>
- Utah State University: https://catalog.usu.edu/preview_course_nopop.php?catoid=12&coid=91326
- Idaho State University: <https://coursecat.isu.edu/undergraduate/allcourses/daac/>
- Temple University: <https://noncredit.temple.edu/search/publicCourseSearchDetails.do?method=load&courseId=90562>
- University of Central Florida: <https://guides.ucf.edu/dance/courses>
- University of California, Irvine: <https://catalogue.uci.edu/allcourses/dance/>
- NC State University: <https://dance.arts.ncsu.edu/courses/>
- Radford University: <https://www.radford.edu/content/gov-school/home/course-descriptions/VPA.html>

Benefits of Dancing

The first section incorporates articles pertaining to square, round, and folk dancing; the second to dancing in general. The information is alphabetized by the last name of the author(s) and with their abstract of their article following.

Dance (Square/Round/Folk)

Flinn, Juliana. "American country dancing: a religious experience." *Journal of Popular Culture* 29, no. 1 (Summer 1995): 61-69. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.0022-3840.1995.2901_61.x

Flinn analyzes her interviews with dancers, musicians, and callers in Little Rock AR concerning country dancing in the US. Many are finding that they are able to connect with others through country dancing.

Foehrenbach, Lenore Mary. "Ice-Breaker: Compulsory Square Dancing." *The Clearing House* 22, no. 5 (January 1948): 307-308. <https://www.tandfonline.com/doi/abs/10.1080/00098655.1948.11473889?journalCode=vtch20>

Kurková, Petra and Jessica J. Maertin. "The benefits of Square dancing as a means of physical activity for Czech dancers with hearing loss." *Acta Gymnica* 44, no. 4 (2014): 223-230. https://gymnica.upol.cz/artkey/gym-201404-0005_the_benefits_of_square_dancing_as_a_means_of_physical_activity_for_czech_dancers_with_hearing_loss.php

Background: Hearing, a strong line of communication that enables individuals to learn about the world around them, is a major factor contributing to the psychomotor development of every individual. Hearing loss can also affect the conception and perception of sounds and rhythm. Objective: The purpose of this study was to describe and analyse the benefits of Square and Round dancing for persons with hearing loss. Methods: The present study is an analytic-descriptive qualitative research. The sample was constituted non-probabilistically based on the following features: a) a participant had to have hearing problems (hearing loss) and b) had to have participated regularly in Square dance for at least two years. Each participant was asked to name possible people to be interviewed (snowball technique). We analysed the data of 7 individuals (6 males and 1 female) with hearing loss. The mean age of the dancers with hearing loss was 51.3 years. The participants had no cochlear implants or any other physical or vision related impairments. Results: The present findings constitute the first published survey regarding Czech Square dancers' status, their family's hearing status, hearing aid use, communication preference, education in integrated or segregated settings, the influence of family background on dance initiation, coach preference (hearing or deaf), and the environment for participation in Square dance as a mode of physical activity with regular dancers and with dancers with hearing loss as well. In the present sample of dancers with hearing loss, most were from

hearing families and had hearing siblings. The degree to which individuals with hearing loss feel comfortable with the hearing world appears to influence their later preference for participating in regular, as opposed to segregated, physical activities. More than half of the dancers with hearing loss who participated in this research study would like to meet with the deaf minority. One of the main reasons for this is to get to know new people and to share experiences with those who have the same problems with hearing. Conclusion: The present study emphasizes the need for the additional support and promotion of the accessibility to their chosen physical activities for individuals with hearing loss. This will be best accomplished if both the deaf and hearing communities work together.

Lorenzo, Christina. "The Art of Square Dancing: Math in Motion." Thesis, North Central College, 2010. www.tiac.net/~mabaker/Lorenzo_squaredancing_thesis.pdf

We will explore many ways of viewing square dancing through various mathematical lenses. Following directions from a caller, eight square dancers work together to rearrange themselves in various geometric patterns before returning to their original positions. Each square dance call produces a permutation of the dancers. We will analyze these permutations using concepts of group theory, such as the order of a call. Geometry also plays a role as the execution of a square dance call preserves symmetry and involves varying amounts of angular rotation. Recently, square dancing has been taken to new mathematical levels as callers introduce more complex ways to vary traditional calls, including ways to reconfigure standard formations making it possible for six couples to dance four-couple choreography, often called hexagon dancing. We will investigate how changing the rules of square dancing affects the algebra and geometry of the dance.

McCoy, Liza and Barbara Schneider. "Dressing for the dance: Aesthetics, ageing and gender in modern square dance." *Clothing Cultures* 4, no. 3 (2017): 203-218.

<https://www.intellectbooks.co.uk/journals/view-Article,id=25529/>

This article examines clothing practices within the square dance community in Calgary, Alberta, Canada, whose members are mainly older adults in the 60–80 age range. What square dancers call 'traditional dress' is no longer required and is, even, overtly criticized by those seeking to update the image of square dance, but it remains the favourite of long-time dancers. Our focus is on the pleasures and practices of this clothing, with particular attention to sensory experience and to the activation of the clothing within forms of gender performance among older adults. Wearing traditional dress offers rich resources for aesthetic and physical

expression and, for women in particular, an opportunity to assert forms of femininity that are otherwise seen as off limits to older women.

Rogers, Nancy and Michael Buchler. "Square Dance Moves and Twelve-Tone Operators: Isomorphisms and New Transformational Models." *Music Theory Online* 9, no. 4 (October 2003): 1-12.

http://www.mtosmt.org/issues/mto.03.9.4/mto.03.9.4.rogers_buchler_frames.html

Both twelve-tone composers and square dance callers use systematic permutations in order to balance variety with familiarity. This paper demonstrates connections between musical and square dance transformations, illustrating some ways in which the two disciplines might inform each other. With nearly seventy moves in the primary or "mainstream" program and a hundred in the more advanced "plus" program, square dance calls could not only augment music theorists' repertoire of transformational devices, but could help expand our fundamental notions of musical transformation. Indeed, non-canonical operations that are considered complex in atonal music theory (such as O'Donnell's split transformations, Mead's Oz, and even Klumpenhouwer's networks) can be modeled by moves that are customary even at the easiest levels of square dance.

Dance (General)

Allet, Lara, Solange Müller-Pinget, et al. "Dance therapy combined with patient education improves quality of life of persons with obesity: A pilot feasibility study for a randomized controlled trial." *Obesity Research & Clinical Practice* 11, no. 1 (January-February 2017): 79-87.

<https://www.sciencedirect.com/science/article/pii/S1871403X16300023#!>

Objective: To assess the effect of dance therapy combined with patient education on quality of life, functional capacity (lower limb power and endurance) and physical activity level in obese individuals. Methods: Thirty-three obese patients were randomised to a control group (structured patient education ambulatory program), and 34 to an intervention group (structured patient education ambulatory program combined with weekly sessions of dance therapy). Patients' quality of life, physical function and physical activity level were assessed at baseline and after 16 weeks. Results: Almost only women were willing to enrol in the study. Participants of the intervention group significantly improved their quality of life ($p = 0.023$), and particularly self-esteem ($p = 0.014$). However, dance therapy added to a patient educational program did not produce statistically significant higher effects than a patient education program alone on functional capacities and patients' physical activity level. Conclusion: A 16 week structured

patient educational program combined with dance therapy seems to have a positive effect on the quality of life of obese people, but no effect on functional capacities and physical activity. Practice implication: Dance therapy combined with structured patient education is an interesting approach to improve quality of life of obese people.

Anderson, Ashley N., Heather Kennedy, et al. "Dance/movement therapy impacts mood states of adolescents in a psychiatric hospital." *The Arts in Psychotherapy* 41, no. 3 (July 2014): 257-262.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455614000471>

Although dance/movement therapy (DMT) is often used in conjunction with traditional therapies for treating children with psychiatric disorders, the evidence base for this therapy is currently small. The goal of this retrospective research is to examine whether DMT, embedded within larger psychiatric therapeutic programs, affects changes in mood states of adolescents suffering from a variety of psychiatric illnesses. Participants include 402 predominately white, non-Hispanic patients (14–21 years old, with a mean age of 14.56 ± 1.70 years) who completed 671 mood measures between August 2010 and December 2011. Participants completed the Fast Assessment of Children's Emotions before and after a group DMT session. When controlling for pre-mood scores, there was a significant change in all mood states and a significant odds of a change in total mood score, per unit increase in pre-total mood score, after one DMT session (odds ratio = 1.84; $p \leq .01$). There was no significant association between patient characteristics and changes in individual or total mood scores, indicating that DMT may be useful for a wide range of patients. The results from this formative study will help researchers develop prospective studies focusing on therapeutic effects of DMT for a wide range of patients.

Anwar-McHenry, Julia, Annette Carmichael, et al. "The social impact of a regional community contemporary dance program in rural and remote Western Australia." *Journal of Rural Studies* 63 (October 2018): 240-250.

<https://www.sciencedirect.com/science/article/pii/S0743016717306307>

The dominance of cities as the centre of the knowledge-based economy in Australia has led to migration of creative artists away from regional centres and smaller cities. While the evidence is limited, it is suggested that the arts positively impact both economic and social sustainability of rural communities. This research sought to establish the social impact of a regional community contemporary dance program, Ausdance WA's Future Landings 2013.

Specifically, whether the project enabled participants to ‘belong’ more to the local community and whether the projects increased capacity for contemporary dance in regional Western Australia. In 2013, Future Landings comprised of three projects representing communities in the Kimberley, Pilbara, and Great Southern regions of rural Western Australia. Data were collected on the extent of activities, partnerships, and media associated with the projects. Self-complete surveys to determine the social impact of the projects were collected from participants at baseline and post-project, as well as from audience members. Finally, focus group interviews were conducted at the project debrief to gather more in-depth information from participants. The findings suggest that the three Future Landings projects were successful in achieving the stated aims. That is, more than 90% of post-project survey respondents felt they had a good bond with, and were connected to their community, and over 80% of audience survey respondents felt the performance had a moderate to strong impact on their opportunities to socialise and feel part of the community. All the participants who responded to the post-project survey stated that their views on contemporary dance had changed as a result of participating in this project. These benefits were thought to extend to the audience as well, whose understanding of contemporary dance changed to something that is more accessible, relevant, and something that they can enjoy. Future Landings 2013 has provided a project development, implementation, and evaluation framework for future Community Arts and Cultural Development projects in regional Australia.

Bachrach, Asaf, Corinne Jola, et al. “Neuronal bases of structural coherence in contemporary dance observation.” *NeuroImage* 124, Part A (January 2016): 464-472.
<https://www.sciencedirect.com/science/article/pii/S1053811915007934>

The neuronal processes underlying dance observation have been the focus of an increasing number of brain imaging studies over the past decade. However, the existing literature mainly dealt with effects of motor and visual expertise, whereas the neural and cognitive mechanisms that underlie the interpretation of dance choreographies remained unexplored. Hence, much attention has been given to the action observation network (AON) whereas the role of other potentially relevant neuro-cognitive mechanisms such as mentalizing (theory of mind) or language (narrative comprehension) in dance understanding is yet to be elucidated. We report the results of an fMRI study where the structural coherence of short contemporary dance choreographies was manipulated parametrically using the same taped movement material. Our participants were all trained dancers. The whole-brain analysis argues that the interpretation of structurally coherent dance phrases involves a subpart (superior parietal) of the AON as well

as mentalizing regions in the dorsomedial prefrontal cortex. An ROI analysis based on a similar study using linguistic materials (Pallier et al., 2011) suggests that structural processing in language and dance might share certain neural mechanisms.

Baimel, Adam, Susan A. J. Birch, et al. “Coordinating bodies and minds: Behavioral synchrony fosters mentalizing.” *Journal of Experimental Social Psychology* 74 (January 2018): 281-290.

<https://www.sciencedirect.com/science/article/pii/S0022103117303931>

Behavioral synchrony, physically keeping together in time with others, is a widespread feature of human cultural practices. Emerging evidence suggests that the physical coordination involved in synchronizing one's behavior with another engages the cognitive systems involved in reasoning about others' mental states (i.e., mentalizing). In three experiments ($N = 959$), we demonstrate that physically moving in synchrony with others fosters some features of mentalizing – a core feature of human social cognition. In small groups, participants moved synchronously or asynchronously with others in a musical performance task. In Experiment 1, we found that synchrony, as compared to asynchrony, increased self-reported tendencies and abilities for considering others' mental states. In Experiment 2, we replicated this finding, but found that this effect did not extend to accuracy in mental state recognition. In Experiment 3, we tested synchrony's effects on diverse mentalizing measures and compared performance to both asynchrony and a no-movement control condition. Results indicated that synchrony decreased mental state attribution to socially non-relevant targets, and increased mental state attribution to specifically those with whom participants had synchronized. These results provide novel evidence for how synchrony, a common feature of cultural practices and day-to-day interpersonal coordination, shapes our sociality by engaging mentalizing capacities.

Bakker, Frank C. “Development of personality in dancers: A longitudinal study.” *Personality and Individual Differences* 12, no. 7 (1991): 671-681.

<https://www.sciencedirect.com/science/article/pii/019188699190222W>

In a longitudinal designed study, young female dancers, spending about 15 hr weekly on classical and modern ballet education, filled in questionnaires measuring temperamental and motivational traits. Subjects were tested on two occasions, with a time interval of 2 yr between first and second occasion. In addition, on the second testing occasion a new sample of dancers filled in the questionnaires for the first time.

The results confirmed the typical personality profile of dancers, reported in an earlier study, i.e. dancers being introverted, relatively high on emotionality, strongly achievement motivated, and exhibiting less favourable self-attitudes. Differences in personality scores between dancers who had continued their professional ballet education and those who had dropped out were small. It is concluded that differences in personality traits between dancers and non-dancers are most likely the result of a process of self-selection, i.e. the ballet subculture attracts persons who possess particular personality traits.

Bakker, Frank C. "Personality differences between young dancers and non-dancers." *Personality and Individual Differences* 9, no. 1 (1988): 121-131.

<https://www.sciencedirect.com/science/article/pii/0191886988900372>

Leisure activities, interests and personality traits of young dancers, spending about 15 h weekly on classical and modern ballet education, were assessed by means of a number of questionnaires.

Two groups were selected. One comprised dancers, aged 11 or 12 years who had been attending a professional ballet school for one or two years. The other group, dancers aged 15 or 16 years, had attended the same ballet school for at least four years. Children of the same age, not involved (above average) in any particular activity made up the two control groups. Leisure activities and interests of dancers differed only slightly from those of non-dancers, although some significant differences emerged. With respect to physical self-concept and self-esteem, findings indicated significantly less favourable attitudes and less self-esteem among dancers as compared to non-dancers. This was true especially in the older group of children. In both age groups, dancers were significantly more introverted than non-dancers.

The results are discussed with reference to the frequently reported positive effects of physical activity on feelings of well-being and on self concept.

Behrends, Andrea, Sybille Müller, et al. "Moving in and out of synchrony: A concept for a new intervention fostering empathy through interactional movement and dance." *The Arts in Psychotherapy* 39, no. 2 (April 2012): 107-116.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455612000214#!>

In this theoretical article, we link literature from different disciplines such as the neurosciences and psychology, dance/movement therapy, dance studies, and philosophy, in order to show that interactional, coordinated movement forms an important base for the development of empathy and prosocial behavior. The presented body of literature suggests that specific elements of joint movement and dance, namely imitation, synchronous movement and motoric cooperation, are suitable for fostering empathic abilities, especially in people with empathy deficits.

In the second part of the article, we present a newly conceptualized dance and movement intervention for people with empathy dysfunction, tailored to its first application for people with autism spectrum disorders. Through enhancing and refining kinesthetic empathy skills, we hypothesize within an integrative concept of empathy, that both emotional and cognitive empathic processes such as empathic concern and perspective taking can be fostered. With a first treatment outcome study of the presented intervention that we will conduct in the near future with people on the autistic spectrum, we aim at evaluating the program and contributing to the understanding of dance and movement approaches for people with empathy deficits.

Blanksby, B.A. and P.W. Reidy. "Heart rate and estimated energy expenditure during ballroom dancing." *British Journal of Sports Medicine* 22, no. 2 (June 1988): 57-60. <https://bjsm.bmj.com/content/22/2/57.short>

Ten competitive ballroom dance couples performed simulated competitive sequences of Modern and Latin American dance. Heart rate was telemetered during the dance sequences and related to direct measures of oxygen uptake and heart rate obtained while walking on a treadmill. Linear regression was employed to estimate gross and net energy expenditures of the dance sequences. A multivariate analysis of variance with repeated measures on the dance factor was applied to the data to test for interaction and main effects on the sex and dance factors. Overall mean heart rate values for the Modern dance sequence were 170 beats.min⁻¹ and 173 beats.min⁻¹ for males and females respectively. During the Latin American sequence mean overall heart rate for males was 168 beats.min⁻¹ and 177 beats.min⁻¹ for females. Predicted mean gross values of oxygen consumption for the males were 42.8 +/- 5.7 ml.kg⁻¹ min⁻¹ and 42.8 +/- 6.9 ml.kg⁻¹ min⁻¹ for the Modern and Latin American sequences respectively. Corresponding gross estimates of oxygen consumption for the females were 34.7 +/- 3.8 ml.kg⁻¹ min⁻¹ and 36.1 +/- 4.1 ml.kg⁻¹ min⁻¹. Males were estimated to expend 54.1 +/- 8.1 kJ.min⁻¹ of energy during the Modern sequence and 54.0 +/- 9.6 kJ.min⁻¹ during the Latin American sequence, while predicted energy expenditure for females was 34.7 +/- 3.8 kJ.min⁻¹ and 36.1 +/- 4.1 kJ.min⁻¹ for Modern and Latin American dance respectively. The results suggested that both males and females were dancing at greater than 80% of their maximum oxygen consumption. A significant difference between males and females was observed for predicted gross and net values of oxygen consumption (in L.min⁻¹ and ml.kg⁻¹ min⁻¹).

Bläsing, Bettina, Beatriz Calvo-Merino, et al. “Neurocognitive control in dance perception and performance.” *Acta Psychologica* 139, no. 2 (February 2012): 300-308. <https://www.sciencedirect.com/science/article/pii/S0001691811002320#!>

Dance is a rich source of material for researchers interested in the integration of movement and cognition. The multiple aspects of embodied cognition involved in performing and perceiving dance have inspired scientists to use dance as a means for studying motor control, expertise, and action-perception links. The aim of this review is to present basic research on cognitive and neural processes implicated in the execution, expression, and observation of dance, and to bring into relief contemporary issues and open research questions. The review addresses six topics: 1) dancers' exemplary *motor control*, in terms of postural control, equilibrium maintenance, and stabilization; 2) how dancers' *timing and on-line synchronization* are influenced by attention demands and motor experience; 3) the critical roles played by *sequence learning and memory*; 4) how dancers make strategic use of *visual and motor imagery*; 5) the insights into the neural coupling between action and perception yielded through exploration of the brain architecture mediating dance observation; and 6) a *neuroaesthetics* perspective that sheds new light on the way audiences perceive and evaluate dance expression. Current and emerging issues are presented regarding future directions that will facilitate the ongoing dialog between science and dance.

Borges, Eliane Gomes da Silva, Rodrigo Gomes de Souza Vale, et al. “Postural balance and falls in elderly nursing home residents enrolled in a ballroom dancing program.” *Archives of Gerontology and Geriatrics* 59, no. 2 (September-October 2014): 312-316. <https://www.sciencedirect.com/science/article/abs/pii/S0167494314000430>

The aim of this study was to investigate the influence of a ballroom dancing program on the postural balance of institutionalized elderly residents. The sample consisted of 59 sedentary elderly residents of long-stay institutions who were randomly assigned to a ballroom dancing experimental group (EG, $n = 30$) or a control group (CG, $n = 29$). The ballroom dancing program consisted of three 50-min sessions each week on alternate days over a 12-week period. The dances included the foxtrot, waltz, rumba, swing, samba and bolero. The medical records of the subjects were reviewed to determine the number of falls they experienced in the three months prior to the intervention. Postural static balance was assessed using a Lizard (Med. EU., Italy, 2010) stabilometric and posturometric platform. Only patients in the EG lost a significant amount of weight ($\Delta = -2.85$ kg) when comparing the pre- and post-test postural balance assessments. The intergroup comparison revealed a reduced lower limb weight distribution difference in the

EG post-test compared to the CG post-test ($p = 0.012$). In the intragroup comparison, the EG patients experienced significantly fewer falls post-test relative to pre-test ($p < 0.0001$). This improvement was not observed for patients in the CG. In the intergroup analysis, we observed fewer falls in the EG post-test compared to the CG post-test ($p < 0.0001$). Therefore it was concluded that sedentary elderly people living in long-term institutions can improve their balance via a ballroom dancing program. This activity improved balance and reduced the number of falls in this elderly population.

Borges, Eliane Gomes da Silva, Samária Ali Cader et al. “The effect of ballroom dance on balance and functional autonomy among the isolated elderly.” *Archives of Gerontology and Geriatrics* 55, no 2 (September-October 2012): 492-496.
<https://www.sciencedirect.com/science/article/abs/pii/S016749431100269X#!>

The aim of the present study was to analyze the influence of a ballroom dancing program on the functional autonomy and physical balance of institutionalized elderly individuals. The study enrolled 75 sedentary elderly subjects from long-term institutions who were randomly divided into a ballroom dance program group (EG; $n = 39$) and a control group (CG; $n = 36$). The protocol of the Latin American Group for Maturity (GDLAM) was used to evaluate functional autonomy. Physical balance was analyzed using a stabilometer and posture meter platforms. The level of significance in statistical tests was set at $p < 0.05$. Regarding the physical balance evaluation, only the members of the EG achieved a significant reduction in weight ($\Delta = -0.98$ kg) following the experiment, both in the intragroup ($p = 0.002$) and in the intergroup analysis ($p = 0.012$). In the evaluation of functional autonomy, only the EG showed a significant reduction in the execution time of all the tests and in the GDLAM index: GI ($\Delta = -6.99$), both in the intragroup ($p < 0.001$) and in the intergroup analysis ($p = 0.011$). Thus, it can be inferred that sedentary elderly individuals who are residents of long-term institutions can improve their functional autonomy and balance with a ballroom dance program.

Bräuninger, Iris. “Dance movement therapy group intervention in stress treatment: A randomized controlled trial (RCT).” *The Arts in Psychotherapy* 39, no. 5 (November 2012): 443-450.
<https://www.sciencedirect.com/science/article/abs/pii/S0197455612001104#!>

This randomized controlled trial compares the effect of a dance movement therapy (DMT) group intervention on stress management improvement and stress reduction with a wait-listed control group (WG). 162 self-selected clients suffering from stress were randomly assigned to a WG or a DMT intervention that received 10 group therapy sessions. Stress management

[Stressverarbeitungsfragebogen/SVF 120], psychopathology and overall distress (Brief Symptom Inventory/BSI) were evaluated at baseline (t1: pre-test), immediately after completion of the ten sessions DMT group intervention (t2: post-test), and 6 months after the DMT treatment (t3: follow-up test). Analysis of variance was calculated to evaluate the between-group (time \times condition) and within-group (time) effect of the DMT intervention. Negative stress management strategies decreased significantly in the short-term at t2 ($p < .005$) and long-term at t3 ($p < .05$), Positive Strategy Distraction improved significantly in the short-term ($p < .10$), as well as Relaxation ($p < .10$). Significant short-term improvements were observed in the BSI psychological distress scales Obsessive-Compulsive ($p < .05$), Interpersonal Sensitivity ($p < .10$), Depression ($p < .05$), Anxiety ($p < .005$), Phobic Anxiety ($p < .01$), Psychoticism ($p < .05$), and in Positive Symptom Distress ($p < .02$). Significant long-term improvement in psychological distress through DMT existed in Interpersonal Sensitivity ($p < .05$), Depression ($p < .000$), Phobic Anxiety ($p < .05$), Paranoid Thinking ($p < .005$), Psychoticism ($p < .05$), and Global Severity Index ($p < .01$). Results indicate that DMT group treatment is more effective to improve stress management and reduce psychological distress than non-treatment. DMT effects last over time.

Bräuninger, Iris. "The efficacy of dance movement therapy group on improvement of quality of life: A randomized controlled trial." *The Arts in Psychotherapy* 39, no. 4 (September 2012): 296-303.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455612000329>

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.

Brustio, Paolo Riccardo, Monica Emma Liubicich, et al. “Dancing in the golden age: a study on physical function, quality of life, and social engagement.” *Geriatric Nursing* 39, no. 6 (November 2018): 635-639.

<https://www.sciencedirect.com/science/article/pii/S0197457218301782>

The aim of this study was to determine the effects of dancing activity based on different dance styles, in groups as well as with a partner, on mobility performance, quality of life and social engagement in a sample of older adults. One hundred and sixty-three older adults (mean age, 70 years; SD = 4 years) participated in a supervised dancing activity programme for 16 weeks. The dancing activity included different dance routines and was progressive in terms of motor complexity. Data on mobility, health-related quality of life and social engagement were collected before and after a 16-week training period. Significant improvements in mobility, quality of life and social engagement were noted in single as well as dual-task performance after the intervention. Our results emphasise the benefit of a 16-week dance training on multidimensional features, including physical and psychosocial domains, which are important for successful ageing.

Burgess, Gillian, Sarah Grogan, et al. “Effects of a 6-week aerobic dance intervention on body image and physical self-perceptions in adolescent girls.” *Body Image* 3, no. 1 (March 2006): 57-66.

<https://www.sciencedirect.com/science/article/abs/pii/S1740144505000811>

Research examining the impact of physical activity on body image dissatisfaction and physical self-perceptions has been both limited and equivocal. The current research investigated the effects of 6-week aerobic dance on these variables with 50 British schoolgirls aged 13–14 years. A cross-over design was used with two equivalent groups taught normal physical education and aerobic dance in a different order. The Body Attitude Questionnaire (BAQ) and Children and Youth Physical Self-Perception Profile (CY-PSPP) were administered as pre, mid and post-test to each participant in each group before the first intervention, at the change over and after 12 weeks. The results of this study revealed that participation in 6 weeks of aerobic dance significantly reduced body image dissatisfaction (Attractiveness, Feeling Fat, Salience and Strength and Fitness) and enhanced physical self-perceptions (Body Attractiveness and Physical Self-

Worth), although these improvements were not sustained. The implications and future research directions are discussed.

Cacioppo S., H. Zhou, et al. “You are in sync with me: Neural correlates of interpersonal synchrony with a partner.” *Neuroscience* 227 (September 27, 2014): 842-858.

<https://www.sciencedirect.com/science/article/abs/pii/S0306452214006241>

Interpersonal synchrony is characterized by a temporary alignment of periodic behaviors with another person. This process requires that at least one of the two individuals monitors and adjusts his/her movements to maintain alignment with the other individual (the referent). Interestingly, recent research on interpersonal synchrony has found that people who are motivated to befriend an unfamiliar social referent tend to automatically synchronize with their social referents, raising the possibility that synchrony may be employed as an affiliation tool. It is unknown, however, whether the opposite is true; that is, whether the person serving as the referent of interpersonal synchrony perceives synchrony with his/her partner or experiences affiliative feelings toward the partner.

To address this question, we performed a series of studies on interpersonal synchrony with a total of 100 participants. In all studies, participants served as the referent with no requirement to monitor or align their behavior with their partners. Unbeknown to the participants, the timings of their “partner’s” movements were actually determined by a computer program based on the participant’s (i.e., referent’s) behavior.

Overall, our behavioral results showed that the referent of a synchrony task expressed greater perceived synchrony and greater social affiliation toward a synchronous partner (i.e., one displaying low mean asynchrony and/or a narrow asynchrony range) than with an asynchronous partner (i.e., one displaying high mean asynchrony and/or high asynchrony range). Our neuroimaging study extended these results by demonstrating involvement of brain areas implicated in social cognition, embodied cognition, self-other expansion, and action observation as correlates of interpersonal synchrony (vs. asynchrony). These findings have practical implications for social interaction and theoretical implications for understanding interpersonal synchrony and social coordination.

Candela, Marzia, Rosa Conte, et al. “The Role of Dancing in the Educational Process.” *Procedia – Social and Behavioral Sciences* 106 (December 10, 2013): 3069-3074.

<https://www.sciencedirect.com/science/article/pii/S187704281304977X>

The aim of this work is to show how dancing, as well as other disciplines, may help to fully shape a person by acting at a physical, psychic and intellectual level simultaneously. We talk about educational dance, which looks at the person rather than at the dancer training and refers to a specific environment, the school context. The reviewed reference literature analyses the so called Free Dance or Modern Dance, a revolutionary movement consolidated in the artistic field at the

beginning of the 20th century. It questions the dichotomy mind-body and support a corporeality free from conditioning. Thanks to its pioneers we witness the gradual access of dancing into physical education programs. Therefore, our inquiry on the relation Dance-School in Italy starts, taking in consideration the earliest normative references: the National Programs 2012. The carried analysis fosters us to review the methodological approach commonly adopted in the school context, for it is still too fossilized on the cognitive aspect and poor of bodily-playful-creative doing. As a result, we believe the teaching workshop is the best solution to prompt the practice of dancing in the school. Because it contemplates either the bodily and psychic aspect or the emotional and cognitive one, more than any other expressive languages, dancing can teach children to “dwell” their own body and find out the untapped potential, heightening the self awareness. Furthermore, the flexibility of dancing allows to link it primarily with music but with other disciplines as well, therefore facilitating their bond and contributing to the achievement of a global vision of knowledge.

Carlson, Emily, Birgitta Burger, et al. “Conscientiousness and Extraversion relate to responsiveness to tempo in dance.” *Human Movement Science* 49 (October 2016): 315-325.

<https://www.sciencedirect.com/science/article/abs/pii/S0167945716301105>

Previous research has shown broad relationships between personality and dance, but the relationship between personality and specific structural features of music has not been explored. The current study explores the influence of personality and trait empathy on dancers’ responsiveness to small tempo differences between otherwise musically identical stimuli, measured by difference in the amount in acceleration of key joints. Thirty participants were recorded using motion capture while dancing to excerpts from six popular songs that were time-stretched to be slightly faster or slower than their original tempi. Analysis revealed that higher conscientiousness and lower extraversion both correlated with greater responsiveness to tempo change. Partial correlation analysis revealed that conscientiousness remained significantly correlated with responsiveness when extraversion was controlled, but not vice versa. No effect of empathy was found. Implications are discussed.

Casey, Sarah E. “Moving to Prevent Child Sexual Abuse: Dance/Movement Therapy as Primary Prevention.” *American Journal of Dance Therapy* 40, no. 2 (December 2018): 240-253.

<https://link.springer.com/article/10.1007/s10465-018-9286-4>

Child sexual abuse (CSA) has adverse effects on both the child and the community. While many therapists know of these effects through working with

survivors, therapy can and should also be used as a primary prevention tool. Looking at the evolution of CSA prevention efforts, one can see that the field has begun to recognize the importance of community involvement as well as experiential learning. Dance/movement therapy (DMT) may provide the next horizon for addressing these aspects of prevention by building both individual and community resilience through movement and the body. This paper proposes a DMT CSA prevention program centered around three skill-building areas: body awareness, boundary awareness, and communication. Through work within these areas a dance/movement therapist can help individuals and communities begin to integrate their own body awareness with the goals of CSA prevention programs in a way that more fully addresses both the whole person and the whole picture of CSA.

Christensen, Julia F., Frank E. Pollick, et al. "Affective responses to dance." *Acta Psychologica* 168 (July 2016): 91-105.
<https://www.sciencedirect.com/science/article/pii/S000169181630052X>

The objective of the present work was the characterization of mechanisms by which affective experiences are elicited in observers when watching dance movements. A total of 203 dance stimuli from a normed stimuli library were used in a series of independent experiments. The following measures were obtained: (i) *subjective measures* of 97 dance-naïve participants' affective responses (Likert scale ratings, interviews); and (ii) *objective measures* of the physical parameters of the stimuli (motion energy, luminance), and of the movements represented in the stimuli (roundedness, impressiveness). Results showed that (i) participants' ratings of *felt* and *perceived* affect differed, (ii) *felt* and *perceived* valence but not arousal ratings correlated with physical parameters of the stimuli (motion energy and luminance), (iii) roundedness in posture shape was related to the experience of more positive emotion than edgy shapes (1 of 3 assessed rounded shapes showed a clear effect on positiveness ratings while a second reached trend level significance), (iv) more impressive movements resulted in more positive affective responses, (v) dance triggered affective experiences through the imagery and autobiographical memories it elicited in some people, and (vi) the physical parameters of the video stimuli correlated only weakly and negatively with the aesthetics ratings of beauty, liking and interest. The novelty of the present approach was twofold; (i) the assessment of multiple affect-inducing mechanisms, and (ii) the use of one single normed stimulus set. The results from this approach lend support to both previous and present findings. Results are discussed with regards to current literature in the field of empirical aesthetics and affective neuroscience.

Claire, Cheriére, Melissa Martel, et al. “Motor, cognitive and psychosocial impacts of an adapted dance program among children with Charcot-Marie-Tooth disease: An exploratory study.” *Annals of Physical and Rehabilitation Medicine* 59 (September 2016): 58.

<https://www.sciencedirect.com/science/article/pii/S1877065716302147>

Objective: Charcot-Marie-Tooth disease (CMT) is a hereditary peripheral neuropathy and belongs to neuromuscular diseases. CMT affects motor function of children, but its clinical expressions are heterogeneous and it could also influence cognitive and psychosocial dimensions of patients. Physical activity is recommended for adults with CMT, but any study has been conducted with children. It is important to propose to children with CMT an adapted physical activity that enables a global approach of the patient. Dance has beneficial motor, cognitive and psychosocial effects. The goal of the present exploratory study is to evaluate motor, cognitive and psychosocial impacts of an adapted dance program among children with CMT. **Material/patients and methods:** Five children with CMT followed a ten weeks dance program in addition to regular care, while four others received only the regular care. Motor (CMT clinical characteristics, muscular strength and power, postural control, pain), cognitive (rhythm task, sustained attention, short term memory) and psychosocial (behavior, self concept and quality of life) parameters were evaluated before and after the ten weeks program for all participants. **Results:** Significant benefits were shown for both motor (CMT clinical characteristics, strength of leg muscle groups, pain during physical activity) and cognitive (rhythm task performance, sustained attention) functions for the dance group. No other significant change was noticed for other parameters. **Discussion–conclusion:** These results suggest that a specific dance program added to regular care can have beneficial effects on motor and cognitive functions of the child that can be affected by CMT. Dance appears as a new approach particularly adapted for children with CMT, and further research is needed to confirm the results of the present study. A new study is being made based on the results of the present one, to evaluate more precisely the impact of a new adapted dance program on balance among children with CMT.

Conceição, Lino Sergio Rocha, Mansueto Gomes Neto, et al. “Effect of dance therapy on blood pressure and exercise capacity of individuals with hypertension: A systematic review and meta-analysis.” *International Journal of Cardiology* 220, (October 1, 2016): 553-557.

<https://www.sciencedirect.com/science/article/pii/S0167527316311834#!>

Background: Dance therapy is a less conventional modality of physical activity in cardiovascular rehabilitation. We performed a systematic review and meta-analysis to investigate the effects of dance therapy in hypertensive patients. **Methods:** Pubmed, Scopus, LILACS, IBECs, MEDLINE and SciELO via Virtual

Health Library (Bireme) (from the earliest data available to February 2016) for controlled trials that investigated the effects of dance therapy on exercise capacity, systolic (SBP) and diastolic (DBP) blood pressure in hypertensive patients. Weighted mean differences (WMD) and 95% confidence intervals (CIs) were calculated, and heterogeneity was assessed using the I^2 test. Results: Four studies met the eligibility criteria. Dance therapy resulted in a significant reduction in systolic blood pressure (WMD -12.01 mm Hg; 95% CI: $-16.08, -7.94$ mm Hg; $P < 0.0001$) when compared with control subjects. Significant reduction in diastolic blood pressure were also found (WMD -3.38 mm Hg; 95% CI: $-4.81, -1.94$ mm Hg; $P < 0.0001$), compared with control group. Exercise capacity showed a significant improvement (WMD 1.31 ; 95% CI: $0.16, 2.47$; $P < 0.03$). A moderate to high heterogeneity was observed in our analysis: $I^2 = 92\%$ to SBP, $I^2 = 55\%$ to DBP, and $I^2 = 82\%$ to exercise capacity. Conclusions: Our meta-analysis showed a positive effect of dance therapy on exercise capacity and reduction of SBP and DBP in individuals with hypertension. However, the moderate to high heterogeneity found in our analysis limits a pragmatic recommendation of dance therapy in individuals with hypertension.

Cristobal, Keira A. "Power of Touch: Working with Survivors of Sexual Abuse Within Dance/Movement Therapy." *American Journal of Dance Therapy* 40, no. 1 (June 2018): 68-86. <https://link.springer.com/article/10.1007/s10465-018-9275-7>

Touch is the first language humans learn; one learns to touch in the womb long before they develop an ability to communicate in other forms. This article speaks to the importance of touch in working with a survivor of sexual abuse. Dance/movement therapy (DMT) understands the importance of integrating the body into psychotherapy. Dance/movement therapist's abilities to meet the individual where they are at somatically support their work with survivors in a touch model. This article, by reviewing existing literature and research in the field of the application of touch in the psychotherapeutic relationship, in combination with the research that states essential goals for survivors of sexual abuse within therapy, attempts to suggest ways in which DMT can enhance and support the use of touch in working with survivors. This article also suggests that touch is a healing component in psychotherapy, particularly in regards to working with survivors to reclaim and relearn their relationship to their bodies.

Devereaux, Christina. "Neuroception and Attunement in Dance/Movement Therapy with Autism." *American Journal of Dance Therapy* 39, no. 1 (June 2017): 36-38. <https://link.springer.com/article/10.1007/s10465-017-9249-1>

During the 51st annual American Dance Therapy Association conference, this author participated in a cross-disciplinary panel “Polyvagal-informed Therapy for Trauma, Attachment and Autism” with Dr. C. Sue Carter, Executive Director of the Kinsey Institute and Rudy Professor of Biology at Indiana University and Dr. Stephen Porges, Distinguished University Scientist at the Kinsey Institute at Indiana University Bloomington and Research Professor in the Department of Psychiatry at the University of North Carolina at Chapel Hill. The following article reprints the author’s remarks on this panel, focusing on the intersections between autism spectrum disorder treatment and the activation of the social engagement system through attuned mobilization in dance/movement therapy.

Dominguez, Katie M. “Encountering Disenfranchised Grief: An Investigation of the Clinical Lived Experiences in Dance/Movement Therapy.” *American Journal of Dance Therapy* 40, no. 2 (December 2018): 254-276.

<https://link.springer.com/article/10.1007/s10465-018-9281-9>

This study employed a transcendental phenomenological methodology to understand how clients’ lived experiences of disenfranchised grief are present within the clinical therapeutic relationship in dance/movement therapy. Data were collected through individual semi-structured interviews from four dance/movement therapists who have worked with clients experiencing disenfranchised grief. Moustakas’ adaptation of the Stevick–Colaizzi–Keen method of data analysis was used concurrently with data collection. Data analysis resulted in four textural themes: (a) Disenfranchised grief can be described as disconnecting, overwhelming, complex, unrecognized, and pervasive; (b) It is distinguished by exacerbated grief; (c) It is recognized as a distinct form of grief; and (d) It involved consistencies in biopsychosocial and movement goals and focus. Structural themes describe how disenfranchisement was experienced: (a) social/cultural factors, (b) dance/movement therapy approach and interventions, (c) heightened kinesthetic empathy and somatic countertransference, and (d) the therapeutic movement relationship. These themes support the current literature and suggest that the experience of disenfranchised grief includes embodied effects. Furthermore, dance/movement therapy may assist with addressing these effects, restoring individuals’ right to grieve, and supporting them in their grieving process.

Engelhard, Einat Shuper. “Dance/movement therapy during adolescence – Learning about adolescence through the experiential movement of dance/movement therapy students.” *The Arts in Psychotherapy* 41, no. 5 (November 2014): 498-503.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455614000938>

Emotional processes during adolescence occur in the psyche (mind) and the soma (body). This article will present a preliminary phenomenological study with 20 dance/movement therapy students. The objective of the research was to learn about adolescence through the type of emotional content that would surface as a result of movement experiences that focused on patterns of movement during adolescence. The participants were asked to move to the music that symbolized their adolescent years to them in the same way they used to move during adolescence. Based on their written reflections of the movement experience, two main themes emerged. In one, the adolescent body is experienced as a vehicle to express urges and desires, and in the other, the adolescent body is experienced in a threatening and revealing manner. These results serve as the basis for my discussion of the therapeutic technique and the somatic countertransference process in movement therapy with adolescents.

Eren, Bilgehan. "The Use of Music Interventions to Improve Social Skills in Adolescents with Autism Spectrum Disorders in Integrated Group Music Therapy Sessions." *Procedia – Social and Behavioral Sciences* 197, no. 25 (July 2015): 207-213.

<https://www.sciencedirect.com/science/article/pii/S1877042815041191>

The lack of social interest is one of the core features of individuals with Autism Spectrum Disorders (ASD). Individuals with ASD suffer direct and indirect consequences related to their social interaction deficits. The effect of these deficits often increases during adolescence. In this period, adolescents with ASD start to report their desire for peer social interaction, and may also experience more loneliness than their typically developing peers. It is especially vital for adolescents with ASD to have emotionally non-threatening social experiences. The non-threatening and acquiescent nature of music helps to decrease the anxiety experienced during direct interaction with others and improve the social skills of adolescents with ASD. In this study, video recordings of music therapy activities carried out with a group of adolescents with ASD are analyzed, and the outcomes are presented. While activities such as singing, rhythmic games, creative movement and dance were performed; adolescents were asked to work in dyads, in small groups and in a large group. Adolescents initiated and sustained social interactions during music sessions and less resistance was observed while interacting with their peers.

Erfer, Tina and Anat Ziv. "Moving toward cohesion: Group dance/movement therapy with children in psychiatry." *The Arts in Psychotherapy* 33, no. 3 (2006): 238-246.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455606000025>

This paper describes dance/movement therapy (DMT) with children ages 5–8 on a short-term inpatient psychiatric unit in a major teaching hospital. The authors contend that DMT is a valuable treatment modality for creating cohesion in groups of children who have previously been chaotic and disorganized. They also contend that this sense of cohesion provides support, and a safe, nonjudgmental atmosphere in which the children are able to work toward attaining therapeutic goals. The development of body image, self-awareness, and awareness of others are important components of DMT sessions described in this paper, and serve as the foundation upon which cohesion is built. To illustrate the effectiveness of DMT in promoting group cohesion, a specific session is described. Changes in behavior that were observed in the group, and on the unit, included improved impulse control, frustration tolerance, gratification delay, and ability to get along with others.

Filippou, Filippou, Evangelos Bebetos, et al. “The Effect of an Interdisciplinary Greek Traditional Dance, Music, and Sociology Program on Male and Female Students’ Anxiety.” *Procedia- Social and Behavioral Sciences* 152 (October 7, 2014): 1237-1241. <https://www.sciencedirect.com/science/article/pii/S1877042814053725>

The aim of this study was to investigate the effect of an interdisciplinary program of Greek traditional dance with issues from music and sociology on high school students’ anxiety. 131 students (68 males & 63 females), between the ages from 12 to 13 yrs., participated. The experimental group (n=62) followed the new eight-week program (two lessons/week) while the control group (n=69) followed the typical physical education program. To evaluate students’ anxiety during lessons, the Competitive State Anxiety Inventory-2 (Martens, Burton, Vealey, Bump, & Smith, 1990) was used with its 3 dimensions (somatic, cognitive anxieties, & self-confidence). Students completed it before the initiation of the intervention and after its completion. The following statistical analyses were performed: a) Factor Analysis, b) Cronbach's alpha test, and c) Anova with Repeated Measures. Results showed that a. “Somatic anxiety”, “cognitive anxiety” and “self confidence” accounted for 83% and 73%, respectively, of the total variance b) Cronbach's alpha was satisfactory (ranging from .66, .78 and .71 for the initial and from .87, .94 and .89 for the final measure), c) the experimental group decreased the levels of somatic and cognitive anxieties and enhanced their self-confidence. Also, male students increased their self-confidence more than female students. These findings support the view that an interdisciplinary program of traditional Greek dance and topics from music and sociology reduces the rates of somatic and cognitive anxieties while simultaneously increases students’ self-confidence's levels, and especially those of males.

Fink, Andreas, Barbara Graif, et al. "Brain correlates underlying creative thinking: EEG alpha activity in professional vs. novice dancers." *NeuroImage* 46, no. 3 (July 2009): 854-862. <https://www.sciencedirect.com/science/article/pii/S1053811909002006>

Neuroscientific research on creativity has revealed valuable insights into possible brain correlates underlying this complex mental ability domain. However, most of the studies investigated brain activity during the performance of comparatively simple (verbal) type of tasks and the majority of studies focused on samples of the normal population. In this study we investigate EEG activity in professional dancers ($n = 15$) who have attained a high level of expertise in this domain. This group was compared with a group of novices ($n = 17$) who have only basic experience in dancing and completed no comprehensive training in this field. The EEG was recorded during performance of two different dancing imagery tasks which differed with respect to creative demands. In the first task participants were instructed to mentally perform a dance which should be as unique and original as possible (improvisation dance). In the waltz task they were asked to imagine dancing the waltz, a standard dance which involves a sequence of monotonous steps (lower creative demands). In addition, brain activity was also measured during performance of the Alternative Uses test. We observed evidence that during the generation of alternative uses professional dancers show stronger alpha synchronization in posterior parietal brain regions than novice dancers. During improvisation dance, professional dancers exhibited more right-hemispheric alpha synchronization than the group of novices did, while during imagining dancing the waltz no significant group differences emerged. The findings complement and extend existing findings on the relationship between EEG alpha activity and creative thinking.

Fritz, Thomas Hans, Samyogita Hardikar, et al. "Musical agency reduces perceived exertion during strenuous physical performance." *PNAS* 110, no. 44 (October 29, 2013): 17784-17789. www.pnas.org/cgi/doi/10.1073/pnas.1217252110

Music is known to be capable of reducing perceived exertion during strenuous physical activity. The current interpretation of this modulating effect of music is that music may be perceived as a diversion from unpleasant proprioceptive sensations that go along with exhaustion. Here we investigated the effects of music on perceived exertion during a physically strenuous task, varying musical agency, a task that relies on the experience of body proprioception, rather than simply diverting from it. For this we measured psychologically indicated exertion during physical workout with and without musical agency while simultaneously

acquiring metabolic values with spirometry. Results showed that musical agency significantly decreased perceived exertion during workout, indicating that musical agency may actually facilitate physically strenuous activities. This indicates that the positive effect of music on perceived exertion cannot always be explained by an effect of diversion from proprioceptive feedback. Furthermore, this finding suggests that the down-modulating effect of musical agency on perceived exertion may be a previously unacknowledged driving force for the development of music in humans: making music makes strenuous physical activities less exhausting.

Ganciu, Mihaela and Oana-Maria Ganciu. "Development of the Creative Capacity by Means of Aerobic Dance in Higher Education." *Procedia – Social and Behavioral Sciences* 163 (December 19, 2014): 110-114.

<https://www.sciencedirect.com/science/article/pii/S1877042814063952>

Nowadays, in a world characterized by evolution and openness, promoting creativity is a must. Starting from the idea that educating creative capacity seems to be the only way by which man can keep up with constantly changing of his world, it is easy to see why the current system of education is trying to change its way of progress. In physical education and sport, very little has been written about educating creativity, though, in this area, creative ability is manifested in various forms. In this paper we try to adapt strategies of educating creativity in our field of physical education. We chose the strategy to make new combinations, as aerobic dance consists of a multitude of elements, and students were able to make choices from a variety of steps and technical processes. Creativity uses experience and knowledge in an original synthesis determined by the situation analysis which arises or occurs at a time. It can be educated and stimulated by the collaboration of the coach with the athletes and the one between themselves. Creativity is a complex process that engages the whole personality of the students. In the aerobics lessons, students have the opportunity to assert their qualities, to evaluate and to prioritize their merits under all aspects. Using the knowledge gained in class they can find solutions and original ideas embodied in the design of aerobic dance programs. Creativity testing is performed by the students' ability - groups of students - to design aerobic dance choreography, to combine learned dance steps as logical and natural. The group of 6 students becomes creative if the teammates agree each other and collaborate for a unique solution. We started from the hypothesis that the socially integrated group with compatible members has a better creating capacity than the group composed of members with no affective relationships. Among the methods used to develop creativity in the experimental group we can mention those formative participatory. To these we can add heuristic

procedures, which provide a creative learning, participatory and anticipatory. The creativity test consists of designing samba choreography of 32 times, the tempo 2/4 made of a set of 6 performers in the form of competition. On the 32nd musical time groups must stop in the final picture. This additional control is given in the conditions of competition in the last lesson for the final evaluation and the University Cup in Aerobic Dance. The arbitration is carried out by FESD teachers specialized in gymnastics and those who teach aerobics. In conclusion, we can say that under aerobic dance lessons one can speak of creating special choreography only for a few students. It's just a creative potential that developed in different ways, both in education and in the independently activities. Imagining steps structures and their assembly as choreographed has largely stimulated types of collective creation. All the choreographies created by students, involved operative and trainable motor behavior in types of collective creation. Individual creative acts gathered and harnessed under the collective one. We consider that aerobic dance is still little studied in terms of education and educational resources of the human personality are largely untapped. Physical education, by its specific, by objectives and contents, contributes to the creative education of students.

Gao, Zan, Tao Zhang, et al. "Children's physical activity levels and psychological correlates in interactive dance versus aerobic dance." *Journal of Sport and Health Science* 2, no. 3 (September 2013): 146-151.

<https://www.sciencedirect.com/science/article/pii/S2095254613000501>

Purpose: The purpose of this study was to compare children's physical activity (PA) levels, self-efficacy, and enjoyment when experiencing dance-exergaming (Dance Dance Revolution, DDR) and aerobic dance in physical education. Methods: A total of 53 urban fourth grade children were divided into two groups, with one group playing DDR and the other group engaged in aerobic dance. After 15 min, the groups switched activities and continued their respective activities for another 15 min. Participants wore NL-1000 pedometers in four consecutive sessions, and responded to a questionnaire measuring their self-efficacy and enjoyment toward two dance activities at the end of the first session. Results: Children spent more moderate-to-vigorous PA (MVPA) time ($p < 0.01$, $\eta^2 = 0.49$) in aerobic dance than DDR. Additionally, children reported significantly higher self-efficacy ($p < 0.001$, $\eta^2 = 0.28$) and enjoyment ($p < 0.01$, $\eta^2 = 0.18$) in DDR than in aerobic dance. Conclusion: Health care professionals and educators may not replace the traditional PAs and sports with interactive video games, but may use exergaming as an excellent addition to promote PA.

Giacosa, Chiara, Falisha J. Karpati, et al. "Dance and music training have different effects on white matter diffusivity in sensorimotor pathways." *NeuroImage* 135 (July 15, 2016): 273-286.

<https://www.sciencedirect.com/science/article/pii/S105381191630088X>

Dance and music training have shared and distinct features. Both demand long and intense physical training to master. Dance engages the whole body, and requires the integration of visual, auditory and motor information. In comparison, music engages specific parts of the body and primarily requires the integration of auditory and motor information. Comparing these two forms of long-term training offers a unique way to investigate brain plasticity. Therefore, in the present study we compared the effects of dance and music training on white matter (WM) structure using diffusion tensor imaging (DTI), and examined the relationship between training-induced brain changes and specific measures of dance and music abilities. To this aim, groups of dancers and musicians matched for years of experience were tested on a battery of behavioural tasks and a range of DTI measures.

Our findings show that dancers have increased diffusivity and reduced fibre coherence in WM regions, including the corticospinal tract, superior longitudinal fasciculus and the corpus callosum. In contrast, musicians showed reduced diffusivity and greater coherence of fibres in similar regions. Crucially, diffusivity measures were related to performance on dance and music tasks that differentiated the groups. This suggests that dance and music training produce opposite effects on WM structure. We hypothesize that intensive whole-body dance training may result in greater fanning of fibres connecting different brain regions, an increase in crossing fibres, or larger axon diameter. In contrast, musical training may result in more focussed enhancements of effector-specific pathways. These findings expand our understanding of brain plasticity by emphasizing that different types of training can have different long-term effects on brain structure (Takeuchi et al., 2011; Baer et al., 2015).

Haboush, Amanda, Mark Floyd, et al. "Ballroom dance lessons for geriatric depression: An exploratory study." *The Arts in Psychotherapy* 33, no. 2 (2006): 89-97.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455605000912>

Twenty depressed, community-dwelling older adults (average age = 69) completed a pilot study of ballroom dance lessons as a treatment for geriatric depression. Participants were randomly assigned to either an immediate or delayed treatment condition. All participants received eight ballroom dance lessons from a selection of six dances (foxtrot, waltz, rumba, swing, cha-cha, and tango) from the National Dance Council of America's syllabus. Effect sizes were in the medium range for the HRSD ($d = .51$) and GDS ($d = .40$), and in the small range for the SCL-90R ($d = .17$). There was some support for self-efficacy and

hopelessness as outcome predictors. Participant feedback indicated the dance lessons were enjoyable and well-received.

Hagensen, Kendall Pauline. "Using a Dance/Movement Therapy-Based Wellness Curriculum: An Adolescent Case Study." *American Journal of Dance Therapy* 37, no. 2 (December 2015): 150-175.

<https://link.springer.com/article/10.1007/s10465-015-9199-4>

This study examined the relationship between an adolescent female's overall wellness, defined by quality of life, and her participation in a dance/movement therapy (DMT)-based holistic wellness curriculum. The curriculum focused on the topics of nutrition, mindfulness, movement, body image, and friendships. Research indicates that the curriculum topics, holistic wellness models, and DMT are each relatively effective for work with adolescent females, but their combination had yet to be explored using the format of the current study. Quantitative and qualitative data were gathered using the Youth Quality of Life-Research Version, as well as parent surveys and session transcriptions. Themes emerging from these data suggest that through engagement with the curriculum the participant increased knowledge about herself and how her body functioned, and that the use of DMT was appropriate in this particular situation. Future in-depth research with groups and different populations is warranted.

Hanna, Judith Lynne. "A Nonverbal Language for Imagining and Learning: Dance Education in K-12 Curriculum." *Educational Researcher* 37, no. 8 (November 2008): 491-506.

<https://www.jstor.org/stable/25209041>

Curriculum theorists have provided a knowledge base concerning aesthetics, agency, creativity, lived experience, transcendence, learning through the body, and the power of the arts to engender visions of alternative possibilities in culture, politics, and the environment. However, these theoretical threads do not reveal the potential of K-12 dance education. Research on nonverbal communication and cognition, coupled with illustrative programs, provides key insights into dance as a distinct performing art discipline and as a liberal applied art that fosters creative problem solving and the acquisition, reinforcement, and assessment of nondance knowledge. Synthesizing and interpreting theory and research from different disciplines that is relevant to dance education, this article addresses cognition, emotion, language, learning styles, assessment, and new research directions in the field of education.

Hashimoto, Hiroko, Shinichi Takabatake, et al. “Effects of dance on motor functions, cognitive functions, and mental symptoms of Parkinson’s disease: A quasi-randomized pilot trial.” *Complementary Therapies in Medicine* 23, no. 2 (April 2015): 210-219.
<https://www.sciencedirect.com/science/article/pii/S0965229915000114>

Objective: To examine the effectiveness of dance on motor functions, cognitive functions, and mental symptoms of Parkinson's disease (PD). Design: This study employed a quasi-randomised, between-group design. Setting: Dance, PD exercise, and all assessments were performed in community halls in different regions of Japan. Participants: Forty-six mild-moderate PD patients participated. Intervention: Six PD patient associations that agreed to participate in the study were randomly assigned to a dance group, PD exercise group, or non-intervention group. The dance and PD exercise groups performed one 60-min session per week for 12 weeks. Control group patients continued with their normal lives. All groups were assessed before and after the intervention. Main outcome measures: We used the Timed Up-and-Go Test (TUG) and Berg Balance Scale (BBS) to assess motor function, the Frontal Assessment Battery at bedside (FAB) and Mental Rotation Task (MRT) to assess cognitive function, and the Apathy Scale (AS) and Self-rating Depression Scale (SDS) to assess mental symptoms of PD. The Unified Parkinson's Disease Rating Scale (UPDRS) was used for general assessment of PD. Results: When comparing results before and after intervention, the dance group showed a large effect in TUG time (ES = 0.65, $p = 0.006$), TUG step number (ES = 0.66, $p = 0.005$), BBS (ES = 0.75, $p = 0.001$), FAB (ES = 0.77, $p = 0.001$), MRT response time (ES = 0.79, $p < 0.001$), AS (ES = 0.78, $p < 0.001$), SDS (ES = 0.66, $p = 0.006$) and UPDRS (ES = 0.88, $p < 0.001$). Conclusions: Dance was effective in improving motor function, cognitive function, and mental symptoms in PD patients. General symptoms in PD also improved. Dance is an effective method for rehabilitation in PD patients.

Ho, Rainbow T. H. “A place and space to survive: A dance/movement therapy program for childhood sexual abuse survivors.” *The Arts in Psychotherapy* 46 (November 2015): 9-16.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455615000702>

Little research on dance/movement therapy (DMT) programs for childhood sexual abuse survivors has been reported. This paper presents the results of a DMT program designed to address the adaptive issue of building healthy relationships with the self and others among Chinese childhood sexual abuse (CSA) survivors. The program emphasizes development of a sense of security and the setting of appropriate boundaries, along with the concepts of place and space. Twenty-five female Chinese CSA survivors (age range 25-52 years) attended a five-session

two-hour weekly DMT program in Hong Kong. The General Health Questionnaire (GHQ), Courtauld Emotional Control Scale, Rosenberg Self-Esteem Scale (RSES), and Stagnation Scale (SS) were administered before (T0), after (T1), and five weeks after the sessions (T2) to measure the program's potential effects. Qualitative feedback was also collected from the participants to better understand their experiences during the program. Analysis of the quantitative data showed changes with small effect sizes in the GHQ, RSES, and Overattachment subscale of the SS but no changes reached statistical significance. The qualitative feedback from the participants demonstrated the program's positive effects to be related primarily to its therapeutic elements. Participants reported finding their inner rhythm and space, developing greater awareness of personal boundaries, enhanced understanding of relationships, and hopes for a better future. Introducing and exploring the concepts of place and space in the DMT program not only provided the participating CSA survivors with a concrete and direct bodily experience but also helped them to articulate physical experiences with a sense of security, freedom, and boundaries. Further investigation with a more rigorous research design and a larger sample size is warranted.

Ho, Rainbow T. H.; Ted C. T. Fong, et al. "Effects of a Short-Term Dance Movement Therapy Program on Symptoms and Stress in Patients With Breast Cancer Undergoing Radiotherapy: A Randomized, Controlled, Single-Blind Trial." *Journal of Pain and Symptom Management* 51, no. 5 (May 2016): 824-831.

<https://www.sciencedirect.com/science/article/pii/S0885392416001172>

Context: Integrated interventions with combined elements of body movement and psychotherapy on treatment-related symptoms in cancer patients are relatively scarce. Objectives: The aim of the present study is to investigate the effectiveness of dance movement therapy (DMT) on improving treatment-related symptoms in a randomized controlled trial. Methods: A total of 139 Chinese patients with breast cancer awaiting adjuvant radiotherapy were randomized to DMT or control group. The intervention included six 1.5-hour DMT sessions provided twice a week over the course of radiotherapy. Self-report measures on perceived stress, anxiety, depression, fatigue, pain, sleep disturbance, and quality of life were completed before and after the three-week program. Results: DMT showed significant effects on buffering the deterioration in perceived stress, pain severity, and pain interference (Cohen $d = 0.34-0.36$, $P < 0.05$). No significant intervention effects were found on anxiety, depression, fatigue, sleep disturbance, and quality of life (Cohen $d = 0.01-0.20$, $P > 0.05$). Conclusion: The short-term DMT program can counter the anticipated worsening of stress and pain in women with breast cancer during radiotherapy.

In-Sil, Park, Kim Ji-Young, et al. “The Relationship between Wellbeing Tendency, Health Consciousness, and Life Satisfaction among Local Community Dance Program Participants.” *Procedia – Social and Behavioral Sciences* 205 (October 9, 2015): 211-220.

<https://www.sciencedirect.com/science/article/pii/S187704281505079X>

The purpose of the research was to find the relationship between wellbeing tendency, health consciousness, and life satisfaction among local community dance program participants. In order to achieve the goal of purpose of the study, a total of 511 surveys were analyzed for frequency analysis, reliability analysis, one way ANOVA, correlation analysis, structural equation modeling: SEM, and bootstrapping method. The results have revealed that wellbeing tendency among the local community dance program participants have a positive influence on health consciousness and life satisfaction. Thus, this proves the usefulness of the dance program, which could lead to program development and practical use for the wellbeing life of mid to elder women. Implications, limitations and future research direction are discussed.

Karpati, Falisha J., Chiara Giacosa, et al. “Dance and music share gray matter structural correlates.” *Brain Research* 1657 (February 15, 2017): 62-73.

<https://www.sciencedirect.com/science/article/pii/S0006899316308046>

Intensive practise of sensorimotor skills, such as music and dance, is associated with brain structural plasticity. While the neural correlates of music have been well-investigated, less is known about the neural correlates of dance. Additionally, the gray matter structural correlates of dance versus music training have not yet been directly compared. The objectives of the present study were to compare gray matter structure as measured by surface- and voxel-based morphometry between expert dancers, expert musicians and untrained controls, as well as to correlate gray matter structure with performance on dance- and music-related tasks. Dancers and musicians were found to have increased cortical thickness compared to controls in superior temporal regions. Gray matter structure in the superior temporal gyrus was also correlated with performance on dance imitation, rhythm synchronization and melody discrimination tasks. These results suggest that superior temporal regions are important in both dance- and music-related skills and may be affected similarly by both types of long-term intensive training. This work advances knowledge of the neural correlates of dance and music, as well as training-associated brain plasticity in general.

Kiepe, Marie-Sophie, Barbara Stöckigt, et al. "Effects of dance therapy and ballroom dances on physical and mental illnesses: A systematic review." *The Arts in Psychotherapy* 39, no. 5 (November 2012): 404-411.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455612000998#!>

This systematic review aims to evaluate the effects of dance (movement) therapy and ballroom dances as therapeutic interventions for adults with physical and mental illnesses in comparison to other interventions or care as usual. A systematic literature search for randomized controlled trials examining dance therapy and ballroom dances published between 1995 and 2011 was carried out in the electronic databases MEDLINE and PsycINFO. 13 publications reporting results from 11 randomized trials (predominantly from USA and Scandinavia) were identified with mostly small samples. They examined breast cancer ($n = 2$), dementia ($n = 1$), Parkinson's disease ($n = 2$), heart failure ($n = 1$), diabetes type 2 ($n = 1$), depression ($n = 3$) and fibromyalgia ($n = 1$). Dance (movement) therapy had a positive impact for patients with breast cancer, improving quality of life, shoulder range of motion and body image. In patients with depression psychological distress was reduced by dance therapy. Ballroom dances improved balance and coordination in patients with Parkinson's disease and disease-specific quality of life in patients with heart failure. Dance (movement) therapy and ballroom dances seem beneficial for patients with breast cancer, depression, Parkinson's disease, diabetes and heart failure. However, further good quality research is needed to gain more profound insight into the efficacy of these treatment options

Kimura, Ken and Noriko Hozumi. "Investigating the acute effect of an aerobic dance exercise program on neuro-cognitive function in the elderly." *Psychology of Sport and Exercise* 13, no. 5 (September 2012): 623-629.

<https://www.sciencedirect.com/science/article/pii/S1469029212000489>

Objective: The present study investigated the types of aerobic dance programs that positively impact cognition, such as executive function, in elderly people. Design: Randomized controlled trial. Method: The study compared the effects of acute aerobic dance exercise on cognitive performance using two 40-min aerobic dance programs. Thirty-four elderly participants, aged 65–75 years, were randomly assigned into either free ($N = 17$) or combination ($N = 17$) style workout groups. The free style (FR) workout consisted of several patterns of movement, while the combination style (CB) workout consisted of similar patterns of movement to FR, but the patterns were joined to form a long choreographic routine. Both dance programs were controlled to be the same in

exercise intensity, approximately 40% heart rate reserve. Reaction time and correct rates were measured using a task-switching reaction time test to evaluate executive cognitive performance immediately before and after the 40-min dance exercise. Results: A two-way (dance program \times pre-post dance exercise) repeated-measures analysis of variance for switch reaction time increase (switch cost) demonstrated a significant interaction ($p = .006$), showing that the switch cost in the CB group became smaller after the dance exercise than before ($p = .009$). Conclusion: The results suggest that the executive cognitive network was facilitated in a CB dance workout that has a dual-task nature and induces movement (task) interference with unexpected movement changes.

Koch, Sabine, Teresa Kunz, et al. "Effects of dance movement therapy and dance on health-related psychological outcomes: A meta-analysis." *The Arts in Psychotherapy* 41, no. 1 (February 2014): 46-64. <https://www.sciencedirect.com/science/article/abs/pii/S0197455613001676>

In this meta-analysis, we evaluated the effectiveness of dance movement therapy¹ (DMT) and the therapeutic use of dance for the treatment of health-related psychological problems. Research in the field of DMT is growing, and 17 years have passed since the last and only general meta-analysis on DMT (Ritter & Low, 1996) was conducted. This study examines the current state of knowledge regarding the effectiveness of DMT and dance from 23 primary trials ($N = 1078$) on the variables of quality of life, body image, well-being, and clinical outcomes, with sub-analysis of depression, anxiety, and interpersonal competence. Results suggest that DMT and dance are effective for increasing quality of life and decreasing clinical symptoms such as depression and anxiety. Positive effects were also found on the increase of subjective well-being, positive mood, affect, and body image. Effects for interpersonal competence were encouraging, but due to the heterogeneity of the data remained inconclusive. Methodological shortcomings of many primary studies limit these encouraging results and, therefore, further investigations to strengthen and expand upon evidence-based research in DMT are necessary. Implications of the findings for health care, research, and practice are discussed.

Krampe, Jean, Joanne M. Wagner, et al. "Does dance-based therapy increase gait speed in older adults with chronic lower extremity pain: A feasibility study." *Geriatric Nursing* 35, no. 5 (September-October 2014): 339-344.

<https://www.sciencedirect.com/science/article/pii/S0197457214001426>

A decreased gait speed in older adults can lead to dependency when the individuals are no longer able to participate in activities or do things for

themselves. Thirty-seven senior apartment residents (31 females; Mean age = 80.6 years; SD = 8.9) with lower extremity pain/stiffness participated in a feasibility and preliminary efficacy study of 12 weeks (24 sessions). Healthy-Steps dance therapy compared to a wait-list control group. Small improvements in gait speed ([ES] = 0.33) were noted for participants completing 19–24 dance sessions. Improvements in gait speed measured by a 10 Meter Walk Test (0.0517 m/s) exceeded 0.05 m/s, a value deemed to be meaningful in community dwelling older adults. These feasibility study findings support the need for additional research using dance-based therapy for older adults with lower extremity pain.

Lakes, Kimberley D., Shesha Marvin, et al. “Dancer perceptions of the cognitive, social, emotional, and physical benefits of modern styles of partnered dancing.” *Complementary Therapies in Medicine* 26 (June 2016): 117-122.

<https://www.sciencedirect.com/science/article/pii/S0965229916300322>

Objective: To study dancers’ perceptions of the physical, cognitive, affective, and social benefits of partnered dancing. Method: 225 dancers (71% female) were recruited through a community ballroom dance center and completed an online survey designed to measure their perceptions of the physical, cognitive, affective, and social benefits of modern, partnered dance styles (swing, Lindy Hop, and ballroom dancing). Subgroups were formed for analyses. For one set of analyses, groups based on length of dance participation were formed: experienced (dancing for more than 2 years) or novice (dancing for less than a year) dancers. For another set of analyses, groups based on frequency of dance practice were formed: committed (dancing at least one or more times per week) or occasional (dancing two or fewer times per month). Results: The majority of participants reported perceived benefits in physical fitness, cognition, affect, and social functioning. Experienced dancers reported significantly greater self-perceived physical, social, and cognitive benefits than novice dancers. Committed dancers were more likely than occasional dancers to report improvements in physical fitness, $U = 6942$, $z = 2.38$, $r = 0.16$, $p < 0.05$. A Mann-Whitney test indicated that self-reported improvements in mood (i.e., feeling less depressed and more happy) were greater for women than for men, $U = 3945$, $z = -3.07$, $r = 0.20$, $p < 0.001$. Length and frequency of dance participation significantly predicted perceived physical benefits [$X^2(1,6) = 35.463$, $p < 0.001$, $R^2 = 0.16$] and social benefits [$X^2(1,6) = 15.776$, $p < 0.05$, $R^2 = 0.07$], but not cognitive benefits. Conclusions: Results suggest that participation in partnered dance styles is associated with perceived improvements in physical fitness, cognitive functioning, social functioning, mood, and self-confidence, and that perceived benefits may increase as individuals dance more frequently and over longer periods of time.

Lang, Martin, Vladimír Bahna, et al. “Sync to link: Endorphin-mediated synchrony effects on cooperation.” *Biological Psychology* 127 (July 2017): 191-197.

<https://www.sciencedirect.com/science/article/pii/S0301051117301151#!>

Behavioural synchronization has been shown to facilitate social bonding and cooperation but the mechanisms through which such effects are attained are poorly understood. In the current study, participants interacted with a pre-recorded confederate who exhibited different rates of synchrony, and we investigated three mechanisms for the effects of synchrony on likeability and trusting behaviour: self-other overlap, perceived cooperation, and opioid system activation measured via pain threshold. We show that engaging in highly synchronous behaviour activates all three mechanisms, and that these mechanisms mediate the effects of synchrony on liking and investment in a Trust Game. Specifically, self-other overlap and perceived cooperation mediated the effects of synchrony on interpersonal liking, while behavioural trust was mediated only by change in pain threshold. These results suggest that there are multiple compatible pathways through which synchrony influences social attitudes, but endogenous opioid system activation, such as β -endorphin release, might be important in facilitating economic cooperation

Lee, Hye-Jin, Seung-Ho Jang, et al. “Effectiveness of dance/movement therapy on affect and psychotic symptoms in patient with schizophrenia.” *The Arts in Psychotherapy* 45 (September 2015): 64-68.

<https://www.sciencedirect.com/science/article/abs/pii/S019745561500060X>

Schizophrenia is a debilitating and pervasive mental illness involving a range of cognitive, behavioral, and emotional dysfunctions alongside impaired occupation or social functioning. Previous studies have suggested that dance/movement therapy (DMT) could be useful for the treatment and management of the symptoms of schizophrenia. This study investigated the effects of DMT on affect and psychotic symptoms in patients with schizophrenia. The DMT group ($n = 18$) received both DMT and medical treatment over 12 weeks, and the control group ($n = 20$) received only medical treatment. The DMT group showed a significant decrease of state anger and depression compared to the control group after treatment (for state anger, $F(1, 36) = 2.26, p < .05$; for depression $F(1, 36) = 5.92, p < .01$), and attained a significant increase of anger control compared to the control group after treatment ($F(1, 36) = 5.11, p < .01$). For psychotic symptoms the DMT group showed a significant decrease of negative psychotic symptoms compared to the control group after treatment ($F(1, 36) = 5.12, p < .01$). DMT is therefore presented as a treatment program that can reduce negative affect with anger control, and improve negative psychotic symptoms.

Lee, Tsung-Chin. "Triology of Body Imaginary: Dance/Movement Therapy for a Psychiatric Patient with Depression." *The Arts in Psychotherapy* 41, no. 4 (September 2014): 400-408.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455614000768>

The purpose of this study is to discuss the application of dance/movement therapy to the case of Chun-Li, a 56-year-old woman diagnosed with major depression with psychotic features, and underscore the relevance of psychic meanings to the treatment process. The treatment consisted of three phases: phase one was focused on building the therapeutic relationship with Chun-Li through regimens and health-enhancing exercise that are rooted in Taiwanese folklore; in phase two, she was encouraged to pay attention to her body and make verbal interpretations in relation to her movements; and phase three was intended to help her embody the inner imagination, making contact with her inner conflict and revealing her traumatic event. In this paper, three aspects of the casework are discussed and related to the theories and practices of dance movement therapy: (1) the bodily relationship in ballroom dance; (2) the effect of the partnership in ballroom dance on Chun-Li; and (3) the imagination invoked by a moving body in dance. This article attempts to explain the meanings of significant body experience and body knowledge development through the transformation of the body.

Lee, Tsung-Chin, Yaw-Sheng Lin, et al. "Dance/movement therapy for children suffering from earthquake trauma in Taiwan: A preliminary exploration." *The Arts in Psychotherapy* 40, no. 1 (February 2013): 151-157.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455612001591>

This study used short-term dance/movement therapy to examine children who were at high risk for post-traumatic stress disorder (PTSD) following the 9/21/99 earthquake in Taiwan. Fifteen elementary-school age children (grades one through five) who were at high risk for PTSD participated in a two-day "Happy Growth" dance/movement therapy program. This program was designed by a team consisting of one dance/movement therapist and three clinical psychologists. At the beginning of the program, the children's behavior was obstreperous and disorderly. During the program, they made coffins and tombs, and then they built castles. The way in which the group process developed was extremely different from the direction that the therapists had originally planned. In terms of the phenomenon displayed through dance/movement therapy, three therapeutic issues were emphasized: (1) What impact does psychophysical liberation have on the possibility for healing? (2) Is making Death Rituality the mourning process for

survivors? (3) What is the significance of “holding” by the therapist in dance/movement therapy? The implications from the study are discussed.

Lemay, M., C. Chérière et al. “Dance as an adjunct therapy to improve cognitive and psychosocial functions in children with neurological impairments.” *Annals of Physical and Rehabilitation Medicine* 61 (July 2018): 459-460.
<https://www.sciencedirect.com/science/article/pii/S1877065718311461#!>

Introduction/Background: Neurological disorders such as neuromuscular disease or cerebral palsy have impacts on motor functions but can also lead to cognitive and psychosocial impairments. Recent studies suggest that dance can be an effective approach to improve cognitive and psychosocial functions in different populations. Based on these evidence, we have developed and implemented three dance programs aiming at improving cognitive and psychosocial dimensions in children with neurological disorders. Material and method: The dance programs were 10 to 12 weeks long (60 minutes per session, two sessions a week) and included various types of dance. These programs were specifically adapted to the need of children with cerebral palsy (1 program, pre/post-test design, $n = 20$) or neuromuscular diseases (2 programs, controlled pre-post-design, $n = 19$). Dance sessions were provided by physiotherapists, adapted dance teachers and a researcher specialized in dance therapy. Cognitive and psychosocial dimensions were evaluated before and after each dance program. Results: Attention was improved in children participating in each of the three programs. Emotional aspects of quality of life and rhythmic abilities were improved in children with neuromuscular disease while specific aspects of memory improved in children with cerebral palsy. Conclusion: Results from these three dance programs provides evidence of cognitive and psychosocial benefits for children with neuromuscular disease and cerebral palsy.

Lenic, Tomas, Peter E. Keller, et al. “Neural tracking of the musical beat is enhanced by low frequency sounds.” *PNAS* 115, no. 32 (August 7, 2018): 8221-8226.
www.pnas.org/cgi/doi/10.1073/pnas.1801421115

Music makes us move, and using bass instruments to build the rhythmic foundations of music is especially effective at inducing people to dance to periodic pulse-like beats. Here, we show that this culturally widespread practice may exploit a neurophysiological mechanism whereby low-frequency sounds shape the neural representations of rhythmic input by boosting selective locking to the beat. Cortical activity was captured using electroencephalography (EEG) while participants listened to a regular rhythm or to a relatively complex

syncopated rhythm conveyed either by low tones (130 Hz) or high tones (1236.8 Hz). We found that cortical activity at the frequency of the perceived beat is selectively enhanced compared with other frequencies in the EEG spectrum when rhythms are conveyed by bass sounds. This effect is unlikely to arise from early cochlear processes, as revealed by auditory physiological modeling, and was particularly pronounced for the complex rhythm requiring endogenous generation of the beat. The effect is likewise not attributable to differences in perceived loudness between low and high tones, as a control experiment manipulating sound intensity alone did not yield similar results. Finally, the privileged role of bass sounds is contingent on allocation of attentional resources to the temporal properties of the stimulus, as revealed by a further control experiment examining the role of a behavioral task. Together, our results provide a neurobiological basis for the convention of using bass instruments to carry the rhythmic foundations of music and to drive people to move to the beat.

Lima, Maristela Moura Silva and Alba Pedreira Vieira. "Ballroom Dance as Therapy for the Elderly in Brazil." *American Journal of Dance Therapy* 29, no. 2 (December 2007): 129-142. <https://link.springer.com/article/10.1007/s10465-007-9040-9>

This paper discusses a dance action-research project developed with elderly people in Brazil. The meanings of ballroom dancing and its benefits are explored for 60 elderly Brazilians through participant observation and questionnaires. This study adds to the growing number of dance projects and research for older people, responding in part to evidence that dance is a form of therapy for its valuable means in augmenting mental, emotional and physical well-being and to counteract social isolation. The dance project took place through the Third Age Club, which was founded by The Viçosa County's Social Assistance Department and the Federal University of Viçosa. At the end of one year taking the ballroom dance classes, the senior citizens were asked to answer a questionnaire in order to provide subjective information on the meanings of ballroom dancing and its benefits for them. The outcome of this inquiry was analyzed under a qualitative approach, phenomenological hermeneutics. Five major categories of therapeutic meanings of ballroom dancing for participants are: ballroom dancing is fun; it brings health benefits; it brings back good dancing memories; it allows participants to establish cultural connections to the larger Brazilian dancing culture; it provides opportunities for socializing. The article ends with reflective analysis of the researchers' observations and field notes by suggesting that the ballroom dancing classes created a culture of inclusion that embraced both understanding and acceptance among senior citizens, which in turn might improve their quality of life.

Macovei, Sabina, Mihaela Zahiu, et al. "Theoretical Arguments for Dance as a Means of Providing Aesthetic Education in Primary School." *Procedia – Social and Behavioral Sciences* 117 (March 19, 2014): 75-80.

<https://www.sciencedirect.com/science/article/pii/S187704281401711X>

Building autonomous and creative personalities is one of the ideals of integral education that also includes aesthetic education. One of its components is the education for self-expression through movement which can be achieved in school by means of physical education activities. The most representative artistic field enabling the development of an aesthetic posture through movement is dancing, and this is why we have chosen to dedicate our study to the formative-educative value of dancing and the importance of including it in primary school curricula, considering that the years spent in primary school are particularly significant in laying the foundations for the further development of the pupils' personality.

Martin, Mary. "Moving on the spectrum: Dance/movement therapy as a potential early intervention tool for children with Autism Spectrum Disorders." *The Arts in Psychotherapy* 41, no. 5 (November 2014): 545-553.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455614001026>

The rising number of Autism Spectrum Disorder (ASD) diagnoses, in addition to the ability to recognize the disorder early, has led to much interest in early intervention tools. This theoretical work examines how dance/movement therapy (DMT) might be applied to address the early developmental connections between social and communication challenges and early motor maturation in young children diagnosed with ASDs. As a foundation for this discussion, literature pertaining to the early relationship of motor challenges and social/communication deficits is reviewed. A theoretical framework is proposed that promotes the integration and early development of these two realms based on DMT interventions and principles in children at high risk for or diagnosed with an ASD.

Mateos-Moreno, Daniel and Lidia Atencia-Doña. "Effect of a combined dance/movement and music therapy on young adults diagnosed with severe autism." *The Arts in Psychotherapy* 40, no.5 (November 2013): 465-472.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455613001500#!>

Current literature is scarce on the potential effects of combined dance/movement and music therapy on adults diagnosed with severe autism, particularly in distinguishing these effects on different areas of psychopathological disorders. We set two goals: first, to assess the effectiveness based on the score the participants

obtained from the Revised Clinical Scale for the Evaluation of Autistic Behavior (ECA-R) after a series of dance/movement and music therapeutic procedures on adults with severe autism; second, to contrast the differences in effectiveness in concrete areas defined by subscales of the ECA-R, especially in its defined 2 factors and 12 functions. An overall of 36 one-hour sessions were carried out during 17 weeks on a sample of 8 participants with severe autism (approximately 2 sessions per week). During the treatment 8 measurements were taken (1 every 3 weeks) from this sample and from a control sample, which was also comprised of 8 subjects who were equally monitored at the same care center by two independent psychologists. Our experimental study seems to suggest that combined dance/movement and music therapy could be effective if used regularly for the improvement of autistic symptoms in adults diagnosed with severe autism.

McGarry, Lucy M. and Frank. A Russo. "Mirroring in Dance/Movement Therapy: Potential mechanisms behind empathy enhancement." *The Arts in Psychotherapy* 38, no. 3 (July 2011): 178-184.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455611000426>

Mirroring, an exercise practiced in Dance/Movement Therapy (DMT), is considered by practitioners and patients to enhance emotional understanding and empathy for others. Mirroring involves imitation by the therapist of movements, emotions, or intentions implied by a client's movement, and is commonly practiced in order to enhance empathy of the therapist for the client. Despite enthusiastic claims for its effectiveness, a clear theoretical framework that would explain the effects of mirroring on empathy has not yet been presented, and empirical research on the topic is generally lacking. In this review, we propose that mirroring in DMT enhances understanding of others' emotional intentions through enhanced use of mirror neuron circuitry. Research on the mirror neuron system (MNS) suggests that the brain areas involved in perception and production of movement overlap, and that these brain areas are also involved in the understanding of movement intention (Rizzolatti & Craighero, 2004). One important route to emotion recognition involves a neural simulation of another person's emotional actions in order to infer the intentions behind those actions, and empathize with them. Future research is proposed in order to systematically explore the effectiveness of mirroring in dance therapy, the neural mechanisms behind it, and its applicability to patient populations who have problems with empathy.

McNeely, M. E., R. P. Duncan, et al. "Impacts of dance on non-motor symptoms, participation, and quality of life in Parkinson disease and healthy older adults." *Maturitas* 82, no. 4 (December 2015): 336-341.

<https://www.sciencedirect.com/science/article/pii/S0378512215300372>

Evidence indicates exercise is beneficial for motor and non-motor function in older adults and people with chronic diseases including Parkinson disease (PD). Dance may be a relevant form of exercise in PD and older adults due to social factors and accessibility. People with PD experience motor and non-motor symptoms, but treatments, interventions, and assessments often focus more on motor symptoms. Similar non-motor symptoms also occur in older adults. While it is well-known that dance may improve motor outcomes, it is less clear how dance affects non-motor symptoms. This review aims to describe the effects of dance interventions on non-motor symptoms in older adults and PD, highlights limitations of the literature, and identifies opportunities for future research. Overall, intervention parameters, study designs, and outcome measures differ widely, limiting comparisons across studies. Results are mixed in both populations, but evidence supports the potential for dance to improve mood, cognition, and quality of life in PD and healthy older adults. Participation and non-motor symptoms like sleep disturbances, pain, and fatigue have not been measured in older adults. Additional well-designed studies comparing dance and exercise interventions are needed to clarify the effects of dance on non-motor function and establish recommendations for these populations.

Meekums, Bonnie, Ieva Vaverniece, et al. "Dance movement therapy for obese women with emotional eating: A controlled pilot study." *The Arts in Psychotherapy* 39, no. 2 (April 2012): 126-133.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455612000226>

This study explored the effectiveness of dance movement therapy (DMT) in obese women with emotional eating who were trying to lose weight. 158 women were recruited from a commercial weight loss programme: 92 with BMI ≥ 28 were identified as emotional eaters and divided into: an exercise control ($n = 32$) and non-exercisers ($n = 60$). The non-exercisers were partially randomised to non exercise control ($n = 30$) and treatment group ($n = 30$). Using a pre- and post-intervention design, 24 of the DMT treatment group, 28 of the exercise control and 27 of the non-exercise control completed all measures on a battery of tests for psychological distress, body image distress, self-esteem and emotional eating. Findings were analysed for statistical significance.

The DMT group showed statistically decreased psychological distress, decreased body image distress, and increased self-esteem compared to controls. Emotional eating reduced in DMT and exercise groups. The authors cautiously conclude that DMT could form part of a treatment for obese women whose presentation

includes emotional eating. Further research is needed with larger, fully, and blindly randomised samples, a group exercise control, longitudinal follow-up, a depression measure, ITT, and cost analyses.

Michael, John, Nataile Sebanz, et al. “Observing joint action: Coordination creates commitment.” *Cognition* 157 (December 2016): 106-113.

<https://www.sciencedirect.com/science/article/pii/S0010027716302141>

Previous research has shown that interpersonal coordination enhances pro-social attitudes and behavior. Here, we extend this research by investigating whether the degree of coordination observed in a joint action enhances the perception of individuals’ commitment to the joint action. In four experiments, participants viewed videos of joint actions. In the low coordination condition, two agents made independent individual contributions to a joint action. In the high coordination condition, the individual contributions were tightly linked. Participants judged whether and for how long the observed agents would resist a tempting outside option and remain engaged in the joint action. The results showed that participants were more likely to expect agents to resist outside options when observing joint actions with a high degree of coordination. This indicates that observing interpersonal coordination is sufficient to enhance the perception of commitment to joint action.

Muller-Pinget, Solange, Isabelle Carrad, et al. “Dance therapy improves self-body image among obese patients.” *Patient Education and Counseling* 89, no. 3 (December 2012): 525-528.

<https://www.sciencedirect.com/science/article/pii/S0738399112002972>

Objective: Obesity and disturbed eating behaviors are both associated with low self-esteem and distorted body images. The aim of this study was to assess the influence of a dance therapy program on the evolution of mental representations linked to body image among obese patients. Changes in body image were evaluated in terms of four parameters: physical, psychological, cognitive, and social. Methods: In total, 18 obese patients were enrolled in a longitudinal dance therapy workshop (DTW) program lasting 36 weeks. Patients danced for 2 h per week and were evaluated three times: at baseline, after 18 weeks, and at the end of the study (36 weeks). Evaluation was performed using questionnaires addressing health-related quality of life, sensorial-motor perception, and mental representations linked to body schema and self-body image. Results: Obese patients enrolled in the DTW displayed a significant improvement in health-related quality of life ($p < 0.03$), body consciousness ($p < 0.001$), and mental representations linked to self body image ($p < 0.001$). Conclusion: DTW allowed obese patients to reset both their somatic and psychic consciousness of their body image. Practice implications: Patients are usually reluctant to practice physical

activity. Dance therapy improves not only body image, but also psycho-social aspects of their personality.

Orlandi, Andrea, Alberto Zani, et al. “Dance expertise modulates visual sensitivity to complex biological movements.” *Neuropsychologia* 104 (September 2017): 168-181.
<https://www.sciencedirect.com/science/article/pii/S0028393217303135>

Motor resonance processes that occur when observing an individual perform an action may be modulated by acquired visuomotor expertise. We used the event-related potential (EEG/ERP) technique to investigate the ability to automatically recognize a subtle difference between very similar novel contemporary dance movements. Twelve professional dancers and twelve non-dancers were shown 212 pairs of videos of complex whole-body movements that lasted 3 s. The second of each pair was the repetition of the previous movement or a slight variation of it (deviance). The participants were engaged in a secondary attentional task. Modulation of a larger centro-parietal N400 effect and a reduction of the Late Positivity amplitude (repetition suppression effect) were identified in response to deviant stimuli only in the dancers. Source reconstruction (swLORETA) showed activations in biological motion, body and face processing related areas, and fronto-parietal and limbic systems. The current findings provide evidence that acquired dance expertise modifies the ability to visually code whole-body complex movements.

Panagiotopoulou, Efthimia. “Dance therapy and the public school: The development of social and emotional skills of high school students in Greece.” *The Arts in Psychotherapy* 59 (July 2018): 25-33.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455617300047>

The article stresses the significance of dance therapy in the school environment. It is based on a research conducted in two Greek public schools, although dance therapy is not yet used in the Greek education system. However, the revised school curriculum gives the opportunity for dance therapy practice. The aim of the research was to ascertain whether dance therapy could contribute to the development of the students' social and emotional skills. The 23 participants were 16–17 years old and were divided in groups: the experimental group which consisted of 11 students and the control group which consisted of 12. Data showed that dance therapy practice enables students to develop their potential and overcome their personal difficulties. The research, both quantitative and qualitative, was conducted with the permission of the Ministry of Education, Research, and Religious Affairs, while both the students and their parents also gave their consent.

Pastena, Nicolina, Cristiana D'anna, et al. "Autopoiesis and Dance in the Teaching-learning Processes." *Procedia – Social and Behavioral Sciences* 106 (December 10, 2013): 538-542.

<https://www.sciencedirect.com/science/article/pii/S1877042813046764>

In recent times, the progresses of the human sciences and neurosciences have shown that the body experience has a deep relationship with the emotional and cognitive processes. So, think of the human being as a fusion of body, mind and emotions, it offers the opportunity to explore new ways of giving value to the body experience of the child. Therefore, the dance education is a discipline appropriate to the world of childhood, it helps the rapprochement between body and mind: the language of the body in dance merges with the language of the soul. In an enactive perspective, dance can be compared to the flow of languaging and emotioning; language is not placed in the brain structure and is not a physiological phenomenon of the nervous system but it is an autopoietic process. The emotioning flow is conditioned by languaging, as well as languaging is complementary to emotioning. Dance, as an ethical possibility for man, is an example of languaging and emotioning, because with the body language humans create and convey emotions subjectively interpreted by the beholder. Therefore, dance can be considered an educational activity, like the other disciplines contributing the formation of personality, ensuring physical, mental and intellectual wellbeing. The dance education in schools may be proposed through the didactic laboratory, it represents a time and a space where you want to harmonize the child's personality through the integration of thoughts, feelings, emotions, motor skills and physicality.

Pereira, Nádia Salgado and Alexandra Marques-Pinto. "Development of a social and emotional learning program using educational dance: A participatory approach aimed at middle school students." *Studies in Educational Evaluation* 59 (December 2018): 52-57.

<https://www.sciencedirect.com/science/article/pii/S0191491X16301705#!>

Participatory research with children and adolescents may increase their responsiveness toward interventions. This study focuses on the development of a program to promote social and emotional skills in middle school students, using educational dance. The main goal was to assess students' social and emotional needs and their interests in education through art activities, duly supported by the opinions of experts. Initially, focus groups were conducted and a questionnaire given out to students (N = 22), in addition to interviews with school representatives (N = 2). Next, students (N = 6) participated in a workshop and responded to a questionnaire. Experts (N = 3) then evaluated the program. Results revealed (a) students' social and emotional needs; (b) that music and dance

matched students' interests; (c) students' high interest and satisfaction with the program; and (d) that the experts' assessment served to validate the program. Implications for practice and research are discussed.

Pereira, Nádia Salgado and Alexandra Marques-Pinto. "Including educational dance in an after-school socio-emotional learning program significantly improves pupil's self-management and relationship skills? A quasi experimental study." *The Arts in Psychotherapy* 53 (April 2017): 36-43.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455616300491>

The present study sets out to assess the efficacy of a socio-emotional learning after-school program, *Experiencing Emotions*, on the socio-emotional skills of middle school pupils, as well as on their well-being and school engagement. The program provides educational dance within the curriculum. The sample included 83 middle school pupils from three portuguese state schools, aged between 9 and 13 years, 45 of the pupils participated in the program and 38 of the pupils participated in individual after-school control activities. Self-report questionnaires were filled in by the pupils and questionnaires were completed by the teachers at the beginning and the end of the program. Results revealed a significant increase in the socio-emotional skills of the pupils who participated in the program in the domains of self-management and relationship skills, comparing with the pupils who participated in the control condition. No significant differences were found between the intervention and the control groups in emotional, psychological and social well-being, or in the behavioral dimension of school engagement. Implications for research and practice are discussed.

Pierce, Laura. "The integrative power of dance/movement therapy: Implications for the treatment of dissociation and developmental trauma." *The Arts in Psychotherapy* 41, no. 1 (February 2014): 7-15.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455613001652>

Chronic and compounding exposure to traumatic events, especially within the context of early attachment relationships, can result in symptoms of dissociation commonly seen in dissociative disorders, personality disorders, and post-traumatic stress disorders. This theoretical article proposes an application of dance/movement therapy as facilitative of right brain integration in adult clients who present with trauma-related dissociative symptoms. Findings from trauma psychology, neuroscience, and dance/movement therapy literature are used to create an attachment-oriented theoretical foundation for how dance/movement therapy might support the integration of dissociated somatic, emotional, and psychological experiences. A model for case-conceptualization and treatment planning is proposed according to a trauma treatment framework consisting of

three phases: safety and stabilization, integration of traumatic memory, and development of the relational self. Within this phase-oriented theoretical framework, dance/movement therapy interventions such as body-to-body attunement, kinesthetic mirroring, interactive regulation, self-awareness, symbolism and expression, and interactional movement are examined as applications that may support bottom-up integration and resolution of psychological trauma. Limitations and suggestions for future research are also discussed.

Pinniger, Rosa, Einar B. Thorsteinsson, et al. "Tango Dance Can Reduce Distress and Insomnia in People with Self-Referred Affective Symptoms." *American Journal of Dance Therapy* 35, no. 1 (June 2013): 60-77.

<https://link.springer.com/article/10.1007/s10465-012-9141-y>

Previous studies indicate that mindfulness interventions and physical activities can produce positive effects on mood disorders; such activities may be options for individuals who search for non-traditional therapies, or whenever mainstream psychological treatments are not effective. We explored the effects of tango dance, meditation, and exercise (circuit training) in individuals with self-reported depression. Participants were randomly placed into meditation, exercise, tango dance, or control-wait-list groups. Sixty-four participants completed the 8-week program and were assessed before, after, and at 1-month follow-up. The dependent variables were depression, anxiety, stress, fatigue, and insomnia (symptoms measures), and self-efficacy, satisfaction with life, and mindfulness (positive psychology measures). Treatment scores were compared with the control group scores. The meditation group showed benefits at follow-up for depression, stress, and satisfaction with life. The exercise group showed decreased depression and increased self-efficacy at post-test, but only self-efficacy was persistent at follow-up, whereas stress was just significant at follow-up. The tango group showed decreased depression and insomnia and increased satisfaction with life and mindfulness at post-test. All, except for satisfaction with life, were persistent at follow-up, while stress and anxiety improved only at follow-up. As expected, the control group maintained similar scores across pre-test and post-test, and at follow-up. Tango dance was shown to induce a broader and more persistent range of benefits. Meditation produced lasting benefits only when well-learned and practiced, whereas exercise generated rapid benefits, but, except for self-efficacy, temporary. Such differences may provide valuable information when promoting these activities to best match the individual needs within this population.

Plevin, Marcia and Leonella Parteli. "Time Out of Time: Dance/Movement Therapy on the Onco-Hematology Unit of a Pediatric Hospital." *American Journal of Dance Therapy* 36, no. 2 (December 2014): 229-246.

<https://link.springer.com/article/10.1007/s10465-014-9185-2>

The suffering caused by a diagnosis of cancer with subsequent hospitalization is traumatic for children and their parents. Their lives change from one day to the next and time is no longer the same. Being hospitalized on the onco-hematology unit of a pediatric hospital implies waiting for medical examinations and procedures to be completed with consequences of passivity or hyperactivity induced by long treatments lasting days, weeks, and even months with uncertain results. An underlying anxiety accompanies this waiting, which constantly pervades the atmosphere of the unit. It is a time out of time. This article illustrates, in the foreground, a clinical approach of dance/movement therapy (DMT) on the unit using movement analysis including Laban Movement Analysis (LMA) (Laban, 1980), fundamental body connections (Bartenieff & Lewis, 1980), and elements from the Kestenberg Movement Profile (KMP) (Kestenberg & Sossin, 1979). In the background influencing the understanding of movement analysis, theoretical concepts of authors such as Winnicott (1985), Bollas (2001), and Stern (2011), contribute to the interventions. The author's body as a *Corpo Ambiente* (body/mind environment) is the state of being that she brings with her from room to room, from bed to bed, to activate and offer therapeutic relationships with three children through movement, dance, play, or simply assisting and staying with their emotional states. The child's age, particular medical treatment, temperament or personality, and resilience to change constitute the physical, emotional, mental, and spiritual nucleus within the hospital's structure, and are the center of this article.

Punkanen, Marko, Suvi Saarikallio, et al. "Emotions in motion: Short-term group form Dance/Movement Therapy in the treatment of depression: A pilot study." *The Arts in Psychotherapy* 41, no. 5 (November 2014): 493-497.

<https://www.sciencedirect.com/science/article/abs/pii/S0197455614000719>

Depression is a highly prevalent mood disorder that impairs a person's social skills and quality of life. Depressed patients have been shown to have difficulty in identifying, expressing, and regulating emotions, especially negative emotions, such as anger. Here, we present a study that investigates using body- and movement-based therapy intervention in the treatment of depression. Central to this study is the use of a short-term group form of Dance/Movement Therapy (DMT) intervention. The main research question was whether a short-term group form of DMT intervention could decrease the symptoms of depression and

anxiety. Depressed participants ($N = 21$, aged 18–60 years) received 20 sessions of group DMT, and measurements, including psychometric questionnaires, were taken before and after the intervention. The mean score of the primary outcome measure, the BDI, decreased significantly from the pre- ($M = 21.67$, $SD = 5.26$) to post-measurement ($M = 10.50$, $SD = 5.50$), $t(17) = 10.40$, $p < .001$. Thus, the short-term, group form of DMT intervention had a positive effect on patients with depression. However, further research using a control group, follow-up measurements and a larger sample size is needed to acquire more evidence supporting the efficacy of the intervention model described in this pilot study.

Rahim, Marhasiyah, Foong Kiew Ooi, et al. “Blood immune function parameters in response to combined aerobic dance exercise and honey supplementation in adult women.” *Journal of Traditional and Complementary Medicine* 7, no. 2 (April 2017): 165-171.
<https://www.sciencedirect.com/science/article/pii/S2225411016300335>

To date, information on the effectiveness of combined aerobic dance exercise with honey supplementation on immune function in women is lacking. The present study investigated the effects of 8 weeks of combined aerobic dance exercise and honey supplementation on blood immune function parameters in adult women. In this study, forty four healthy sedentary women (25–40 year-old) were assigned into four groups with $n = 11$ per group: sedentary without supplementation control (Con), honey supplementation (H), aerobic dance exercise (D) and combined aerobic dance exercise with honey supplementation (HD) groups. Aerobic dance exercise was carried out for one hour per session, three sessions per week for eight weeks. Honey drink was consumed by H and HD groups, in a dosage of 20 g of honey diluted in 300 ml of plain water, consumed 7 days a week for 8 weeks. In HD group, the participants were required to consume honey drink 30 min before performing exercise. Before and after 8 weeks of experimental period, blood samples were taken to determine the concentrations of immune parameters which include full blood counts and immunophenotyping measurements. It was found that after 8 weeks of experimental period, there were statistically significant increases in T cytotoxic (CD8) ($p < 0.05$) in HD group. Additionally, the percentages increase in total lymphocyte counts, T helper (CD4), and T cytotoxic (CD8) counts after 8 weeks were the highest in HD group among all the groups. As conclusion, combined aerobic dance and honey supplementation may have potential to enhance immune functions in women.

Rocha, Priscila A., Susan C. Slade, et al. “Dance is more than therapy: Qualitative analysis on therapeutic dancing classes for Parkinson’s.” *Complementary Therapies in Medicine* 34 (October 2017): 1-19.

<https://www.sciencedirect.com/science/article/pii/S0965229917301103>

Objectives: To understand the benefits and limitations of therapeutic dancing classes for people with Parkinson's disease (PD) and how best to design and implement classes. **Design:** A stakeholder forum explored the opinions of 18 allied health clinicians, dance instructors, people with PD and caregivers. Data were thematically analysed and interpreted within a grounded theory framework. **Results:** Four main themes were identified: (1) the need to consider the stage of disease progression when designing classes; (2) recognition that dance is more than just therapy; (3) the benefits of carefully selecting music to move by; (4) ways to design classes that are both feasible and engaging. These themes give rise to the theory that dancing classes can provide more than just therapeutic benefits. Dance affords creative expression and enables people to immerse themselves in the art-form, rather than focussing on the disease. The results highlight the benefits of enabling individuals with PD to be able to express themselves in a supportive environment that does not see them solely through the lens of Parkinson's. The feasibility of dance programs can be increased by educating dancing teachers about PD and the unique needs of people living with this condition. **Conclusion:** Well-structured dance classes can promote social-connectedness and joy, in addition to facilitating movement to music and physical activity. Consumers advised that careful planning of the classes and tailoring them to participant needs optimizes outcomes.

Rodrigues-Krause, Josianne, Juliano Boufleur Farinha, et al. "Cardiorespiratory responses of a dance session designed for older women: A cross sectional study." *Experimental Gerontology* 110 (September 2018): 139-145.

<https://www.sciencedirect.com/science/article/pii/S0531556518302729>

Background: Dancing has been increasingly used as a type of exercise intervention to improve cardiovascular fitness of older people. However, it is unclear which may be the exercise intensity of the dance sessions. **Objective:** To describe cardiorespiratory responses of a dance session for older women, and to identify intensity zones in relation to peak oxygen consumption (VO_{2peak}), first and second ventilatory thresholds (VT1 and VT2). **Methods:** Ten women (66 ± 5 yrs., BMI 27 ± 4) were examined on three occasions: Familiarization, maximum effort and dance sessions. Incremental treadmill test: 5 km/h, 2% slope each min, until maximum effort. Dance class (60 min): warm-up (20 min), across-the-floor (10 min), choreography (15 min), show (10 min) and cool-down (5 min). Ventilatory parameters were measured continuously (breath-by-breath). **Results:** VO_2 ($mL \cdot kg^{-1} \cdot min^{-1}$): Maximum effort: VO_{2peak} (23.3 ± 4.3), VT1 (17.2 ± 3.5) and VT2 (20.9 ± 3.4). Dancing: warm-up (12.8 ± 2.4 , $\sim 55\%VO_{2peak}$), across-the-floor (14.2 ± 2.4 $\sim 62\%VO_{2peak}$), choreography (14.6 ± 3.2 $\sim 63\%VO_{2peak}$) and

show (16.1 ± 3.3 , $\sim 69\%$ VO_2peak). Show was similar to VT1. Conclusions: Cardiorespiratory demands of a dance class for older women are at low aerobic intensity. Show was similar to VT1, indicating that a dance class may be modulated to improve aerobic fitness, at least at initial stages of training.

Rodrigues-Krause, Josianne, Juliano Boufleur Farinha, et al. “Effects of dancing compared to walking on cardiovascular risk and functional capacity of older women: A randomized controlled trial.” *Experimental Gerontology* 114 (December 2018): 67-77.
<https://www.sciencedirect.com/science/article/pii/S053155651830439X>

Introduction: Aging is characterized by reductions in lean mass simultaneously to increases in visceral adipose tissue, elevating cardiovascular risk (CVR) and physical dependence. Dancing has been recommended for improving fall-risk and CVR, however, comparisons with traditional exercises are limited. This study aimed to compare the effects of dancing with walking on CVR and functionality of older women. Methods: Thirty sedentary women (65 ± 5 years, BMI 27 ± 4 kg/m²) were randomized into three groups (n = 10/group): dancing, walking or stretching (active control). All interventions lasted 8 weeks (60 min sessions): dancing/walking 3×/week, stretching 1×/week. Dancing: several styles, no partner. Walking: treadmill, 60% peak oxygen consumption (VO_2peak). Stretching: large muscle groups, no discomfort. Before and after interventions assessments: VO_2peak (primary outcome), total cholesterol, HDL-C, LDL-C, glucose, insulin, CRP, TNF- α , waist and hip circumferences, visceral adipose tissue (VAT), muscle thickness, maximal muscle strength/power, static and dynamic balance, gait ability, flexibility, chair-raise and level of physical activity (PA). Statistics: generalized estimating equations, post-hoc LSD ($p < 0.05$), SPSS 22.0. Results: (Mean-CI): (before vs after): group vs time interaction showed increases in VO_2peak ($\text{mL}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$) for dancing 23.3 (20.8–25.8) vs 25.6 (23.4–27.8), and walking 23.4 (21.3–25.5) vs 27.0 (25.4–28.6), with no differences for stretching 23.5 (21.3–25.7) vs 23.0 (21.0–24.9). Lower body muscle power and static balance also improved for dancing and walking, but not for stretching. Main time effect showed improvements in CRP, TNF- α , LDL-C, HDL-C, VAT, waist, hip, chair raise, flexibility and level of daily PA for all groups. Conclusion: Dancing induced similar increases in VO_2peak , lower body muscle power and static balance as walking, while the stretching group remained unchanged. Pooled effects showed improvements in body composition, lipid and inflammatory profile, which are supported by increased PA levels.

Rodrigues-Krause, Josianne, Juliano Boufleur Farinha, et al. “Effects of dance interventions on cardiovascular risk with ageing: Systematic review and meta-analysis.” *Complementary Therapies in Medicine* 29 (December 2016): 16-28.
<https://www.sciencedirect.com/science/article/pii/S0965229916301406>

Background: Exercising, including dancing, has been recommended to improve cardiovascular health of older people. Herein, we conducted a systematic review and meta-analysis verifying the effects of dance interventions on cardiovascular risk (CVR) in the elderly, comparing dancers to non-exercise controls and other types of exercise, in randomised (RCTs) and non-randomised control trials (nRCTs). Primary/Secondary outcomes: peak oxygen consumption (VO_{2peak})/anthropometric measurements (body weight, BMI), and lipid profile. Methods: Data Sources: MEDLINE, Cochrane Wiley, Clinical Trials.gov, PEDRO and LILACS databases. Study Selection: RCTs and nRCTs comparing elderly before and after dance interventions with non-exercising controls and/or practitioners of other types of exercise. Two independent reviewers extracted data and assessed the quality of included studies. Results: A total of 937 articles were retrieved, 64 full texts were assessed for eligibility, and 7 articles met the inclusion criteria. Pooled mean differences between intervention and control were calculated by random-effects model. VO_{2peak} improved in favour of dancers ($3.4 \text{ mL kg}^{-1} \text{ min}^{-1}$, 95%CI: 1.08, 5.78, $I^2 = 71\%$), compared to non-exercise controls. No differences were found between dance and other exercises. Body weight and BMI were not altered by dance interventions. Conclusions: Dance interventions may increase VO_{2peak} compared to non-exercising controls. Results also indicate it is as effective as other types of exercise in improving aerobic capacity of the elderly. Dancing might be a potential exercise intervention for improving cardiorespiratory fitness and consequent CVR associated with ageing. Proper reporting on adverse events is needed to base the benefits of dancing for the older on both efficacy and safety of the interventions.

Ross, Ann and Stephen A. Butterfield. "The Effects of a Dance Movement Education Curriculum On Selected Psychomotor Skills Of Children in Grades K-8." *Research in Rural Education* 6, no.1 (1989): 51-56.

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.567.1467&rep=rep1&type=pdf>

The effects of a dance/movement education (D/ME) program on children's fitness and gross motor development is reported. Fifty-four girls and 66 boys received 36 weeks of D/ME in conjunction with the school's regular physical education program. The D/ME intervention used in this study was based on Laban's basic movement themes of force, space, time and flow. Pre and posttests were administered to determine the extent of changes in the children's motor behavior which may have occurred as a result of this programming. Several statistically significant improvements were observed for boys and girls on a wide range of fitness and gross motor skills.

Samaritter, Rosemarie, Helen Payne, et al. “Kinaesthetic intersubjectivity: A dance informed contribution to self-other relatedness and shared experience in non-verbal psychotherapy with an example from autism.” *The Arts in Psychotherapy* 40, no. 1 (February 2013): 143-150.

<https://www.sciencedirect.com/science/article/abs/pii/S019745561200161X>

Early interpersonal experiences have been the focus of philosophy and developmental psychology for decades. Concepts of self and self-other relatedness seem to have an onset in early interaction patterns during dyadic relating. Phenomenologists consider the embodied, that is the intercorporeal dialogue, as the basis for self-other relating. Developmental psychologists have shown that the responsiveness a child is met with during early phases of life is a very subtle process. Kinaesthetic intersubjectivity is introduced as a perspective on dyadic relating. Embodied attitude during dance duets is taken as an example of active nonverbal attunement between interaction partners. Shared movement situations will serve as an example of how a sense of intersubjectivity and self-other differentiation can be perceived through movement structures. Shared movement intervention could offer a new perspective for psychotherapeutic intervention in disorders with a disturbed self, like autism and need researching.

Santana, Rita, Maria João Gouveia, et al. “Demographic and Well-Being Predictors of Regular and Long-term Practice of Argentine Tango in a Multicultural Sample of Practitioners.” *American Journal of Dance Therapy* 39, no. 2 (December 2017): 252-266.

<https://link.springer.com/article/10.1007/s10465-017-9258-0>

The practice of Argentine tango has experienced exponential growth all over the world, and several studies have revealed its positive outcomes on physical health. The present study aims to analyze demographic, well-being, and other psychological variables associated with the regular and long-term practice of Argentine tango. Participants included 524 men and women from 52 countries (*Mean* = 42.4; *SD* = 11.52; *Range* = 18–77). A multiple regression analysis was carried out designating the frequency of attendance at *milongas* as the dependent variable. Among women (*n* = 334), age, relationship situation, flourishing, and flow, emerged as significant predictors. Older and non-committed women, with a low level of flourishing, and a high level of flow were more likely to report a high frequency of tango practice. Among men (*n* = 190), relationship situation, flourishing, flow, and positive affects emerged as significant predictors. Non-committed men, with a low level of flourishing, a high level of flow, and a high level of positive affects were more likely to report a high frequency of tango practice. Another multiple regression analysis was conducted using the length of participants' experience dancing tango as the dependent variable. Older and

committed women with a high level of flow were more likely to report a pattern of long-term tango practice. Older men with a high level of flow were also more likely to be long-term practitioners of tango. These results raise questions about the potential effects of tango dancing on participants' well-being.

Schroeder, Krista, Sarah J. Ratcliffe, et al. "Dance for Health: An Intergenerational Program to Increase Access to Physical Activity." *Journal of Pediatric Nursing* 37 (November-December 2017): 29-34.

<https://www.sciencedirect.com/science/article/pii/S0882596317302907>

Purpose: The purpose of this study was to evaluate Dance for Health, an intergenerational program to increase access to physical activity in an underserved, high risk urban community. **Design and Methods:** Dance for Health was developed using community-based participatory research methods and evaluated using an observational study design. The program entailed two hour line dancing sessions delivered by trained dance instructors in the neighborhood recreation center. The weekly sessions were delivered for one month in the spring and one month in the fall from 2012–2016. Nurse practitioner students mentored local high school students to assess outcomes: achievement of target heart rate, Borg Rating of Perceived Exertion, number of pedometer steps during dance session, Physical Activity Enjoyment Scale, and adiposity. Analytic methods included descriptive statistics and mixed effects models. **Results:** From 2012–2016, 521 participants ranging from 2–79 years attended Dance for Health. Approximately 50% of children and 80% of adults achieved target heart rate. Achievement of target heart rate was not related to perceived exertion, though it was related to pedometer steps in adults. All participants rated the program highly for enjoyment. There was no change in adiposity. **Conclusions:** Dance for Health demonstrated high levels of community engagement and enjoyment. It led to adequate levels of exertion, particularly for adults. Our evaluation can inform program refinement and future intergenerational physical activity programs. **Practice Implications:** Dance is an enjoyable, culturally appropriate, low cost method for increasing access to physical activity for children and families.

Scharoun, Sara M., Nicole J. Reinders, et al. "Dance/Movement Therapy as an Intervention for Children with Autism Spectrum Disorders." *American Journal of Dance Therapy* 36, no. 2 (December 2014): 209-228.

<https://link.springer.com/article/10.1007/s10465-014-9179-0>

Autism Spectrum Disorder (ASD) is one of the most common forms of developmental disabilities of childhood, rooted in atypical language and social development, in conjunction with repetitive and patterned behaviors. It is also

suggested that gross and fine motor impairments are a core feature of ASD, are more prevalent in comparison to the general population, and may be further exaggerated due to reduced participation in physical activity. As awareness for ASD has increased, so have the number of therapeutic approaches; however, no single intervention has proven beneficial in alleviating the cardinal symptoms of ASD. Therefore the most effective treatment or combination of treatments remains inconclusive. Creative movement and dance is a practical and feasible option for children with ASD. However, there exists a dearth of literature evaluating dance/movement therapy (DMT) for children with ASD, despite providing both physical and psychological benefits for children with ASD. This article aims to perform a narrative review of the literature.

Serrano-Guzmán, María, Carmen M. Valenza-Peña, et al. “Effects of a dance therapy programme on quality of life, sleep and blood pressure in middle-aged women: A randomized controlled trial.” *Medicina Clínica (English Edition)*147, no. 8 (October 21, 2016): 334-339.

<https://www.sciencedirect.com/science/article/abs/pii/S2387020616306842#!>

Background and objective: Evidence suggests that dance therapy may have positive effects in areas such as cardiovascular parameters and sleep. The aim of the present study is to explore whether a dance therapy programme improves sleep and blood pressure in a population of middle-aged pre-hypertensive and hypertensive women. Methods: A randomised controlled trial was conducted, in which participants were assigned to one of 2 groups: standard care (with usual activities and medication) or dance therapy (in which the participants followed a dance therapy programme, in addition to their medication). The intervention was an 8-week, 3-times-per-week, progressive and specific group dance-training programme. The dance steps were specifically designed to improve balance by shifting the body and relocating the centre of gravity. The main measures obtained were blood pressure, sleep quality and quality of life, measured by the Pittsburgh Sleep Quality Index and the European Quality of Life Questionnaire. Results: Sixty-seven pre-hypertensive and hypertensive middle-aged women were randomised to either an intervention group (n = 35) or a control group (n = 32) after baseline testing. The intervention group reported a significant improvement in blood pressure values ($p < 0.01$), as well as in sleep quality ($p < 0.05$) and quality of life ($p < 0.001$), compared to the control group. Conclusion: The dance therapy programme improved blood pressure, sleep and quality of life in pre-hypertensive and hypertensive middle-aged women, and constitutes an interesting basis for larger-scale research.

Sgouramani, Helena and Argiro Vatakis. “Flash” dance: How speed modulates perceived duration in dancers and non-dancers.” *Acta Psychologica* 147 (March 2014): 17-24.
<https://www.sciencedirect.com/science/article/pii/S000169181300142X>

Speed has been proposed as a modulating factor on duration estimation. However, the different measurement methodologies and experimental designs used have led to inconsistent results across studies, and, thus, the issue of how speed modulates time estimation remains unresolved. Additionally, no studies have looked into the role of expertise on spatiotemporal tasks (tasks requiring high temporal and spatial acuity; e.g., dancing) and susceptibility to modulations of speed in timing judgments. In the present study, therefore, using naturalistic, dynamic dance stimuli, we aimed at defining the role of speed and the interaction of speed and experience on time estimation. We presented videos of a dancer performing identical ballet steps in fast and slow versions, while controlling for the number of changes present. Professional dancers and non-dancers performed duration judgments through a production and a reproduction task. Analysis revealed a significantly larger underestimation of fast videos as compared to slow ones during reproduction. The exact opposite result was true for the production task. Dancers were significantly less variable in their time estimations as compared to non-dancers. Speed and experience, therefore, affect the participants' estimates of time. Results are discussed in association to the theoretical framework of current models by focusing on the role of attention.

Shanahan, J., L. Coman, et al. “To dance or not to dance? A comparison of balance, physical fitness and quality of life in older Irish set dancers and age-matched controls. *Public Health* 141 (December 2016): 56-62.
<https://www.sciencedirect.com/science/article/pii/S0033350616301846>

Objective: The objective of this study is to determine if older adults regularly participating in Irish set dancing have superior balance, physical fitness and quality of life compared to age-matched controls. Study design: This study used a community-based, observational cross-sectional design. Methods: Regular set dancers ($n = 39$) and age-matched controls ($n = 33$) were recruited. Participants were assessed using the physical activity scale for the elderly (physical activity levels), mini-BESTest (balance) and senior fitness test (battery of functional fitness tests). Quality of life was also assessed using the EuroQol EQ visual analogue scale. Results: When controlling for between-group differences in levels of physical activity (ANCOVA analysis), the dancers had significantly better balance, functional capacity and quality of life (all $P < 0.05$) compared to controls. No differences between the groups were observed in other measures of functional fitness. Conclusion: The findings of this study suggest regular

participation in set dancing is associated with health benefits for older adults. These results may inform future studies prospectively examining the role of set dancing for falls prevention, emotional well-being and cognitive function in community-dwelling older adults.

Sharp, Kathryn and Jonathan Hewitt. "Dance as an intervention for people with Parkinson's disease: A systematic review and meta-analysis." *Neuroscience & Biobehavioral Reviews* 47 (November 2014): 445-456.

<https://www.sciencedirect.com/science/article/pii/S014976341400236X>

Recent studies suggest dance may be able to improve motor and non-motor disabilities in Parkinson's disease patients. A systematic review and meta-analysis of randomised controlled trials (RCT's) regarding the effectiveness of dance compared with no intervention and other exercise interventions was performed. Five trials were included and methodological quality and mean or standardised mean differences were calculated. Dance significantly improved UPDRS motor scores (-10.73 , CI -15.05 to -6.16 ; $P = 0.004$), berg balance (0.72 , CI 0.31 to 1.44 ; $P = 0.0006$) and gait speed (0.14 m/s CI 0.02 to 0.26 ; $P = 0.02$) when compared with no intervention. When compared with other exercise interventions significant improvements in berg balance (3.98 , CI 1.52 to 6.44 , $P = 0.002$) and quality of life (PDQ-39) (-4.00 , CI -7.13 to -0.87 , $P = 0.01$) were found. Dance demonstrates short term clinically meaningful benefits in Parkinson's disease. Future RCT's should be well designed and determine the long term effects of dance, which dose and type of dance is most effective and how dance compares to other exercise therapies.

Shi, Zhi-Min, Gui-Hong Lin, et al. "Effects of music therapy on mood, language, behavior, and social skills in children with autism: A meta-analysis." *Chinese Nursing Research* 3, no. 3 (September 2016): 137-141.

<https://www.sciencedirect.com/science/article/pii/S2095771816300822>

Objective: To investigate the effects of music therapy on mood, language, behavior, and social skills in children with autism. Methods: A literature search was conducted using the following Chinese databases: the China National Knowledge Infrastructure (CNKI), Wanfang Data, the Chinese Biomedical Literature (CBM) Database, and the VIP Chinese Science and Technology Periodicals Database. The search terms were "autistic children" or "children with autism" and "music therapy" or "music treatment." Studies of randomized controlled trials (RCTs) were included, and each publication included was assessed for quality. A meta-analysis was conducted using RevMan 5.1. Results: Publications were selected based on the inclusion and exclusion criteria. Six research articles describing RCTs were included; the total sample size was 300 patients. The results of meta-analysis showed that music therapy improved mood

[Risk ratio (RR) = 3.02, 95% confidence interval (CI) = 1.93–4.11, Z = 5.45, P < 0.000 01] and behavior (RR = 7.36, 95% CI = 4.28–10.44, Z = 4.69, P = 0.000 01) in children with autism. Additionally, music therapy improved language (RR = 4.05, 95% CI = 3.38–4.73, Z = 11.71, P = 0.000 01), sensory perception (RR = 4.62, 95% CI = 1.55–7.69, Z = 2.95, P = 0.003), and social skills (RR = 4.66, 95% CI = 1.90–7.42, Z = 3.31, P = 0.000 9) in children with autism. Conclusions: Music therapy can improve mood, language, sensory perception, behavior, and social skills in children with autism.

Staiano, Amanda E., Robbie A. Beyl, et al. “Twelve weeks of dance exergaming in overweight and obese adolescent girls: Transfer effects on physical activity, screen time, and self-efficacy.” *Journal of Sport and Health Science* 6, no. 1 (March 2017): 4-10.

<https://www.sciencedirect.com/science/article/pii/S209525461630103X>

Background: Given the low levels of physical activity (PA) among adolescent girls in the US, there is a need to identify tools to motivate increased PA. Although there is limited evidence that adolescents transfer PA from one context to another, exergames (i.e., video games that require gross motor activity) may act as a gateway to promote overall PA outside game play. The purpose of this study was to examine potential transfer effects (i.e., influences on external behaviors and psychological constructs) of a 12-week exergaming intervention on adolescent girls' PA, screen time, and self-efficacy toward PA, as well as the intrinsic motivation of exergaming. Methods: Participants were 37 girls aged 14–18 years (65% African American, 35% white) who were overweight or obese (body mass index \geq 85th percentile) and were recruited from the community via school, physicians, news media, and social media websites. Adolescents were randomly assigned to a 12-week group exergaming intervention (thirty-six 60 min sessions of group-based dance exergaming in a research laboratory using Kinect for Xbox 360 (Microsoft Corporation, Redmond, WA, USA)) or to a no-treatment control group. Outcome variables included objectively measured PA (total) and self-reported leisure-time PA (discretionary time only) 1 week before vs. 1 week after the intervention; selected type and intensity of PA when placed in a gym setting for 30 min (“cardio free choice”); screen time; self-efficacy toward PA; and intrinsic motivation toward exergaming. Results: Attendance at the exergaming sessions was high (80%). Compared with the control group, the intervention group self-reported an increase in PA (p = 0.035) and fewer hours watching television or videos (p = 0.01) after the intervention, but there were no significant differences in sedentary, light, moderate, or vigorous PA measured by accelerometry. The intervention group significantly improved self-efficacy toward PA (p = 0.028). The intervention group highly rated intrinsic motivation toward exergaming. Conclusion: Exergaming for 12 weeks was associated with positive impacts on adolescent girls' self-reported PA, television viewing, self-efficacy,

and intrinsic motivation. Future research is warranted to leverage exergames as an enjoyable, motivating, and effective PA tool.

Stupacher, Jan, Pieter-Jan Maes, et al. “Music strengthens prosocial effects of interpersonal synchronization – If you move in time with the beat.” *Journal of Experimental Social Psychology* 72 (September 2017): 39-44.

<https://www.sciencedirect.com/science/article/pii/S0022103117300835>

In many of our daily social interactions, we need to coordinate and to synchronize movements. Various studies have demonstrated that interpersonal movement synchronization has positive effects on cooperation and affiliation. Here, we investigated whether music as compared to a metronome can further strengthen these prosocial effects. We used a within-subjects design in which participants watched videos of two figures walking side by side – without being engaged in a motor task themselves. The participants' task was to imagine that they are one of these figures and that the other figure represents an unknown person. Manipulated factors were *acoustic accompaniment* (music, metronome, and silence) and *synchrony* (both in phase with the beat, *other-figure out / self-figure in phase*, and *other-figure in / self-figure out of phase*). Participants rated the closeness of the two figures, the likability of the *other-figure*, and how well they felt as the *self-figure*. All three ratings were higher with music compared to the metronome. Additionally, with music but not with the metronome, the likability of the *other-figure* was significantly lower when the *other-figure* was walking out of phase and the *self-figure* in phase, as compared to the other way around (*other-figure* in phase and *self-figure* out of phase). In conclusion, music can strengthen the prosocial effects of interpersonal movement synchronization, provided that one interacts with a person who moves in time with the beat.

Tarr, Bronwyn, Jacques Launay, et al. “Silent disco: dancing in synchrony leads to elevated pain thresholds and social closeness.” *Evolution and Human Behavior* 37, no. 5 (September 2016): 343-349.

<https://www.sciencedirect.com/science/article/pii/S1090513816300113>

Moving in synchrony leads to cooperative behavior and feelings of social closeness, and dance (involving synchronization to others and music) may cause social bonding, possibly as a consequence of released endorphins. This study uses an experimental paradigm to determine which aspects of synchrony in dance are associated with changes in pain threshold (a proxy for endorphin release) and social bonding between strangers. Those who danced in synchrony experienced elevated pain thresholds, whereas those in the partial and asynchrony conditions experienced no analgesic effects. Similarly, those in the synchrony condition reported being more socially bonded, although they did not perform more

cooperatively in an economic game. This experiment suggests that dance encourages social bonding among co-actors by stimulating the production of endorphins, but may not make people more altruistic. We conclude that dance may have been an important human behavior evolved to encourage social closeness between strangers.

Tord, Patricia de and Iris Bräuninger. “Grounding: Theoretical application and practice in dance movement therapy.” *The Arts in Psychotherapy* 43 (April 2015): 16-22.
<https://www.sciencedirect.com/science/article/abs/pii/S0197455615000040#!>

In dance movement therapy practice, it is customary and widespread that therapists use and apply concepts of grounding in their sessions and for assessing their clients’ movement profiles. Literature exists in Bioenergetics’ body oriented psychotherapy; however, theoretical foundation of grounding in dance movement therapy is sparse. This theoretical article revises key concepts of grounding and integrates them in the theory and practice of DMT. The clinical vignettes provide examples of grounding exercises applied to two specific populations, namely older people with dementia and adults with intellectual disability. Grounding exercises provide a therapeutic and creative tool that aims to strengthen the connection to one's body and to one's personal reality. Exercises regarding physical, emotional, sensory and social levels of grounding are applicable to practitioners of DMT and related fields. The theoretical foundation and application of grounding in DMT suggests that its use is especially beneficial, for example, in cases of depression, anxiety, stress, and trauma.

Valdesolo, Piercarlo, Jennifer Ouyang, et al. “The rhythm of joint action: Synchrony promotes cooperative ability.” *Journal of Experimental Social Psychology* 46, no. 4 (July 2010): 693-695.

<https://www.sciencedirect.com/science/article/pii/S0022103110000430>

Although evidence has suggested that coordinated action enhances rapport and fosters cooperation, the possibility that it might also influence the *ability* to pursue joint goals has yet to be demonstrated. We show that rocking in synchrony enhanced individuals’ perceptual sensitivity to the motion of other entities and thereby increased their success in a subsequent joint-action task that required the ability to dynamically detect and respond appropriately to a partner’s movements. These findings support the view that in addition to fostering social cohesion, synchrony hones the abilities that allow individuals to functionally direct their cooperative motives.

Vankova, Hana, Iva Holmerova, et al. “The Effect of Dance on Depressive Symptoms in Nursing Home Residents.” *Journal of the American Medical Directors Association* 15, no. 8 (August 2014): 582-587.

<https://www.sciencedirect.com/science/article/pii/S152586101400231X>

Objective: To evaluate the effect of a dance-based therapy on depressive symptoms among institutionalized older adults. Design: Randomized controlled trial. Setting: Nursing homes. Participants: Older adults (60 years or older) permanently living in a nursing home. Intervention: Exercise Dance for Seniors (EXDASE) Program designed for the use in long-term care settings performed once a week for 60 minutes for 3 months. Measurements: Baseline measures included sociodemographic characteristics, ability to perform basic as well as instrumental activities of daily living, basic mobility, self-rated health, and cognitive status. Outcome measures were collected before and after the intervention and included assessment of depressive symptoms using the geriatric depression scale (GDS). Results: Comparison of participants with MMSE of 15 or higher showed that GDS scores in the intervention group significantly improved ($P = .005$), whereas the control group had a trend of further worsening of depressive symptoms ($P = .081$). GLM analysis documented highly statistically significant effect of dance therapy ($P = .001$) that was not influenced by controlling for intake of antidepressants and nursing home location. Dance therapy may have decreased depressive symptoms even in participants with MMSE lower than 15 and resulted in more discontinuations and fewer prescriptions of antidepressants in the intervention group than in the control group. Conclusion: This study provides evidence that dance-based exercise can reduce the amount of depressive symptoms in nursing home residents. In general, this form of exercise seems to be very suitable and beneficial for this population.

Wagner, Dee and Stacey McGinn Hurst. “Couple Dance/Movement Therapy: Bringing a Theoretical Framework into Practice.” *American Journal of Dance Therapy* 40, no. 1 (June 2018): 18-43.

<https://link.springer.com/article/10.1007/s10465-018-9271-y>

Romantic relationships have a highly-charged nonverbal component making dance/movement therapy (DMT) an ideal treatment modality. While a handful of dance/movement therapists have written about work that explores romantic partnering and some dance/movement therapists offer therapy for couples, couples DMT remains a new theoretical frontier. As of 2017, no theoretical framework exists to guide therapeutic intervention in the relational dances of romantic partners. Borrowing from counseling and marriage and family therapy theories, integrated with DMT theories and supported by recent neuroscience, the

authors propose a theoretical framework for therapists and educators to consider. Much of couples counseling theory comes out of attachment theory which dance/movement therapists understand kinesthetically if not yet in specific application to couples movements. The field of DMT and counseling both note that relational dances are influenced by cultural context and thus this proposed theoretical framework acknowledges the importance of therapists maintaining cultural awareness. Finally, healthy sexuality requires the kind of embodiment that DMT facilitates, which supports the authors' proposal that couples DMT contributes such a valuable addition to traditional couples therapy that the development of a theoretical framework for that work will serve DMT practitioners as well as the therapeutic field as a whole.

Zander, Lysann, Madeleine Kreutzmann, et al. "How school-based dancing classes change affective and collaborative networks of adolescents." *Psychology of Sport and Exercise* 15, no. 4 (July 2014): 418-428.

<https://www.sciencedirect.com/science/article/pii/S146902921400051X>

Objective: The present research investigated the effects of adolescents' co-participation in a federally funded dance intervention project on students' *affective* and *collaborative networks*. In the intervention, students instructed by professional dancers collaboratively developed a dance-choreography during regular class hours in student groups. We expected that the number of reciprocated affective and collaborative ties should increase in classrooms participating in the intervention, but that boys should particularly benefit from the intervention. **Design:** We used a quasi-experimental untreated control group design with dependent pretest and posttest samples. Participants were 421 youths (48% boys) in 23 classrooms of primary and secondary schools in Berlin, Germany. Of these, 226 (54%) participated in the intervention. Classrooms from the same grade and school were recruited as comparison groups. We assessed both networks using sociometric questionnaires. **Method/Results:** We found a significant Treatment \times Gender interaction showing that reciprocated collaborative relations increased only for boys in the intervention group. Analyses probing potential mechanisms showed this was due to their choosing more collaboration partners, in particular more girls. **Conclusion:** Findings suggest that school-based dancing programs encouraging coordinated physical activity in student groups may be particularly beneficial for boys, encouraging them to consider girls as academic cooperation partners and to proactively develop their collaborative networks.

Zhao, T. Christina and Patricia K. Kuhl. “Musical intervention enhances infants’ neural processing of temporal structure in music and speech.” *PNAS* 113, no. 19 (May 10, 2016): 5212-5217. www.pnas.org/cgi/doi/10.1073/pnas.1603984113

Individuals with music training in early childhood show enhanced processing of musical sounds, an effect that generalizes to speech processing. However, the conclusions drawn from previous studies are limited due to the possible confounds of predisposition and other factors affecting musicians and nonmusicians. We used a randomized design to test the effects of a laboratory-controlled music intervention on young infants’ neural processing of music and speech. Nine-month-old infants were randomly assigned to music (intervention) or play (control) activities for 12 sessions. The intervention targeted temporal structure learning using triple meter in music (e.g., waltz), which is difficult for infants, and it incorporated key characteristics of typical infant music classes to maximize learning (e.g., multimodal, social, and repetitive experiences). Controls had similar multimodal, social, repetitive play, but without music. Upon completion, infants’ neural processing of temporal structure was tested in both music (tones in triple meter) and speech (foreign syllable structure). Infants’ neural processing was quantified by the mismatch response (MMR) measured with a traditional oddball paradigm using magnetoencephalography (MEG). The intervention group exhibited significantly larger MMRs in response to music temporal structure violations in both auditory and prefrontal cortical regions. Identical results were obtained for temporal structure changes in speech. The intervention thus enhanced temporal structure processing not only in music, but also in speech, at 9 mo of age. We argue that the intervention enhanced infants’ ability to extract temporal structure information and to predict future events in time, a skill affecting both music and speech processing.