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Future research direction from the perspective of music therapy

Abstract

Authors and colleagues have continued various activity and research of music therapy in Shikoku Island division of Integrative Medicine Japan (IMJ) for years. There are scientific methods for studying music therapy, in which near-infrared spectroscopy (NIRS) has been used for monitoring tissue oxygenation.It would be important to consider the method for not only the quantitative and qualitative research axes, but also the impressions for the music and art from each subject. Among them, Mixed Method Research (MMR) has been applied so far. We expect that further research in various perspectives will be developed in the future.

Keywords: integrative medicine Japan, near-infrared spectroscopy, mixed method research, major depressive disorder, shigeaki hinohara

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Abbreviations: IMJ, integrative medicine Japan; NIRS, near-infrared spectroscopy; MMR, mixed method research; MDD, major depressive disorder

Text

Music therapy has been developing in each country across the world. There is World Music Therapy Association (WMTA) as an international organization.[1] On the other hand, Dr. Shigeaki Hinohara, the father of music therapy in Japan, had developed music therapy for long years in Japan.[2] The author held the 9th National Congress of the Japan Music Therapy Association (JMTA) in 2009, with 5,800 participants for three days.[3] After that, the author has been a director of Shikoku Island Division, Integrative Medicine Japan (IMJ), and continued various activities for the development of music therapy and integrative medicine (IM).[4]

Authors and colleagues have continued various research for music therapy. They included the assessment of actual situation of ADL/QOL, assessment of the efficacy, egogram, Profile of Mental Status (POMS), related matters of EBM and NBM, and so on.[3] It is certain that significant changes in numerical values and comparable indices are considered to be effective. However, we cannot know whether the client feels satisfied or effective with the therapy.[4] In other words, the crucial point is that it is not numerical change, but a meaningful change.

It is known that music has a positive effect on maintaining and improving people's health. Depending on the atmosphere of the music, it affects how people can be feeling, which is related to "The Iso Principle".[5] Furthermore, there are some gaps in the mechanism of how our body works for music, and some music effects on our body and soul leading to improved health.[6]

In the clinical setting, most widely application of music therapy has been group music session for the elderly. From the research of combined physical exercise and music, there weremore effects on cognitive function in elderly people than exercise alone.[7] Investigation of mechanism on music effects and well-controlled research program are necessary.[8] In such cases, we have given some rhythm-based interventions and observed the changes in symptomatic benefits to the patients with various neurological diseases.[8]

There are scientific methods for studying music therapy. The application of near-infrared spectroscopy (NIRS) has been used for monitoring tissue oxygenation in clinical situations. NIRS has been developed for detecting various signals from cerebral hemodynamic changes.[9] Thus, NIRS has been the focus for the various investigation presenting the change in the blood stream.[10] Historically speaking, NIRS was originally used for the monitoring in the cerebral and myocardial oxygenation.[11] It is non-invasive neuroimaging tool with several advantages such as low price, real time monitoring, portability, safety and simplicity.[12] NIRS has been applied to clinical research including cerebral vascular accident (CVA), muscle metabolism, post-operative stroke, hemodynamic oxygenation changes of brain, and so on.[13] Detail investigation of NIRS has been progressing at present.[14]

By the study of listening music on frontal lobe activation by NIRS, calm music could reduce human stress and bring effective relaxation.[15] Furthermore, clapping the rhythm could increase brain activation. Consequently, active music session can become more effective than passive music session from brain activation.[15] In the case of the research for giving verbal task, blood flow on NIRSsignals were also increased.[16] Thus, the study of NIRS has been useful for measuring changes in blood flows for stimuli of music and language.

Using NIRS, there was a study for how the brain modulates when musicians performed improvisation in a blues rock format.[17] As a result, the activity in medical frontal lobe was found, which was associated with reduced activity of the dorsolateral prefrontal cortex (DLPFC). Although participants showed wide range of improvisation skills, significant correlation was found between subjective positive feelings for improvisation and the modulation of left DLPFC.[17]

Patients with major depressive disorder (MDD) were investigated using NIRS.[18] The purpose was to explore the efficacy of music therapy on the activity of the brain. The verbal fluency task (VFT) was improved significantly after music therapy. Subjects of MDD showed more significantly elevated activation for the dorsolateral prefrontal cortex (DLPFC), orbitofrontal cortex (OFC) and ventromedial prefrontal cortex (VMPFC) after music therapy.[18]

There are some studies of music therapy for attention function in adults and elderly, but such studies in children have been rare with brain-imaging research.[19] Similar to music, attention skills have

developed in childhood with various engagement of the environment. Consequently, if these developments were interrupted, higher social, motor and cognitive functions may be influenced.[19]

Preterm infants tend to have cognitive and neurobehavioral impairments.[20] Such neurodevelopmental problems may be relieved by non-pharmacological interventions including creative music therapy (CMT). It provides individual social and biological contact and musical stimulation by interactive, resource-/needs-oriented approaches.[20]

There has been various development of the research method of music therapy.[21] As one of the therapies, music has been studied for the perspectives of neuroscience. Recent topics include the aspects of executive function (EF) and attentional processes (AP). Some potential for EF/AP stimulation and neurorehabilitation would be involved in the playing the instruments and musical improvisation.[21]

For long years, human has loved arts in a variety manner. They are roughly classified into some categories as follows:

i. Visual group (drawing, painting, sculpture, photography),

ii. Auditory and performance group (music, play, dance),

iii. Text-based group (poetry, novel).[22]

As arts developed more, the trials of research have progressed.[23] From the research point of view, the biomarkers need to be quantitative values or qualitative factors. It is indeed that study for arts has scientific scale, but the feeling of each person cannot be excluded. In the region of various arts, we have to take evaluation into consideration that cannot be measured so easily.[24]

Consequently, the trial of strategy with mixed methods research (MMR) has been proposed.[24] In the case of research practices, the combination of MMR and arts will lead to methodological pluralism. Such way of research direction can be expected to bring evaluation from various aspects and beneficial contribution from bio-psycho-social aspects.[25]

In summary, music therapy has a beneficial effect on people's minds and bodies, and research in this field has been progressing. It would be important to consider the method for not only the quantitative and qualitative research axes, but also the impressions for the music and art from each subject. Among them, Mixed Method Research (MMR) has been applied so far. We expect that further research in various perspectives will be developed in the future.

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Conflicts of interest

The authors declare no conflict of interest.

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References

1. Moore C, Elliott D. Introduction to music therapy practice. *Journal of Music Therapy*. 2018;56(1):117–121.
2. Bando H, Yoshioka A, Iwashimizu Y, et al. Development of Primary Care, Lifestyle Disease and New Elderly Association (NEA) in Japan – Common Philosophy With Hinohara–ism. *Prim Health Care*. 2017;7(3):281.
3. Nishikiori Y, Bando H, Yoshioka A, et al. Trials of Additional Effective Movements for Music Therapy Session for the Elderly. *Curr Res Complement Altern Med*. 2010;4:138.
4. Hirai Y, Bando H, Yoshioka A, et al. Music and Man in Art: The Future of Media and Technology. *Global J Arts Social Sci*. 2020;2(1):116.
5. Stewart RA. The Effect of Educational Material on Public Perception of "The Iso Principle" and Its Use in Music Therapy. *The degree of Master of Music. College of Music, Florida State University Libraries*. 2016;(2016–4–15):1–31.
6. Cheever T, Taylor A, Finkelstein R, et al. NIH/Kennedy center workshop on music and the brain: finding harmony. *Neuron*. 2018;97(6):1214–1218.
7. Satoh M, Ogawa J, Tokita T, et al. The effects of physical exercise with music on cognitive function of elderly people: Mihama–kiho project. *PLoS One*. 2014;9(4):e95230.
8. Devlin K, Alshaikh JT Pantelyat A. Music Therapy and Music–Based Interventions for Movement Disorders. *Curr Neurol Neurosci Rep*. 2019;19:83.
9. Hoshi Y. Functional Near–infrared Spectroscopy: Limitations and Potential. *J Jpn Coll Angiol*. 2005;4561–4567.
10. Yang M, Yang Z, Yuan T, et al. A Systemic Review of Functional Near–Infrared Spectroscopy for Stroke: Current Application and Future Directions. *Frontiers in Neurology*. 2019;10:58.
11. Jöbsis FF. Noninvasive, infrared monitoring of cerebral and myocardial oxygen su□ciency and circulatory parameters. *Science*. 1977;198(4323):1264–1267.
12. Mihara M, Miyai I. Review of functional near–infrared spectroscopy in neurorehabilitation. *Neurophotonics*. 2016;3(3):031414.
13. De Vis JB, Petersen ET, Kersbergen KJ, et al. Evaluation of perinatal arterial ischemic stroke using noninvasive arterial spin labeling perfusion MRI. *Pediat Res*. 2013;74:307–313.
14. Tachtsidis I, Scholkmann F. False positives and false negatives in functional NIRS: issues, challenges and the way forward. *Neuriophotonics*. 2016;3(3):030401.
15. Ikeuchi M, Mori S, Jono H, et al. Research on the Frontal lobe Activation Effect of Music Therapy□□Effect of Listening Music on Frontal lobe Activation by Using Near–Infrared Spectroscopy. *Japanese Journal of Complementary and Alternative Medicine*. 2018;15(2):91–101.
16. Takahashi T, Takikawa Y, Kawagoe R, et al. Influence of skin blood flow on near–infrared spectroscopy signals measured on the forehead during a verbal fluency task. *Neuroimage*. 2011;57(3):991–1002.
17. Tachibana A, Noah JA, Ono Y, et al. Prefrontal activation related to spontaneous creativity with rock music improvisation: A functional near–infrared spectroscopy study. *Sci Rep*. 2019;9:16044.
18. Feng K, Shen CY, Ma XY, et al. Effects of Music Therapy on Major Depressive Disorder: A Study of Prefrontal Hemodynamic Functions Using fNIRS. *Psychiatry Research*. 2019;275:86–93.
19. Kasuya–Ueba Y. Utilising novel research techniques in cognitive neuroscience, such as functional near–infrared spectroscopy, to study how music impacts on the brain activity, function and structure. *Impact*. 2019;2:52–54.

20. Haslbeck FB, Jakab A, Held U, et al. Creative music therapy to promote brain function and brain structure in preterm infants: a randomized controlled pilot study. *NeuroImage: Clinical.* 2020;25:102171.

21. Koshimori Y, Thaut MH. New Perspectives on Music in Rehabilitation of Executive and Attention Functions. *Frontiers in neuroscience*. 2019;13:1245.

22. Knowles JG, Cole AL. Handbook of the arts in qualitative research: Perspectives, methodologies, examples, and issues. *Thousand Oakes, CA: Sage.* 2008.

23. Sullivan G. Research acts in art practice. *Studies in Art Education*. 2006;48(1):19–35.

24. Archibald M. Investigator triangulation: A collaborative strategy with potential for mixed methods research. *Journal of Mixed Methods Research*. 2016;10:228–250.

25. Mayoh J, Onwuegbuzie AJ. Toward a conceptualization of mixed methods phenomenological research. *Journal of Mixed Methods Research*. 2015;9(1):91–107.

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