

THE ROLE OF MUSIC IN SPORTS

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Introduction : The psychophysiological impacts of music have been broadly examined in both brain science (De Giorgio et al., 2017; Benke et al., 2018; Innes et al., 2018; Padovan et al., 2018) and in exercise and game related fields (Jarraya et al., 2012; Terry et al., 2012). The impacts of activity on the mind are notable (for a survey see De Giorgio, 2017, De Giorgio et al., 2018a), however the impact that music has on practice and its cerebral partner has as of late been researched (Bigliassi et al., 2017; Tabei et al., 2017). It has been exhibited that music can set off conduct changes, i.e., there is a basic adjustment of mind capability which can instigate individuals to build their activity adherence and investment (Altenmüller and Schlaug, 2012). Music has additionally been exhibited to be compelling in lessening weariness and its connected side effects (Jing and Xudong, 2008), in close to home guideline (Hou et al., 2017), in controlling emotional excitement (Hutchinson et al., 2018) and in working on the adequacy of the engine framework (Bigliassi et al., 2017).

Be that as it may, music stays an emotional encounter and De Nora (2000) examined how individuals select music in an emotional way to further develop state of mind and energy levels during active work. Besides, the impact of music is likewise connected with the two its natural components, for example, beat and musicality and outward factors arising out of social and extra-melodic affiliations (Zatorre et al., 2007; Koc and Curtseit, 2009; Karageorghis et al., 2012). Paying attention to a specific kind of music has been found to work on emotional experience during low, moderate, and focused energy work out (De Nora, 2000; Karageorghis and Cleric, 2012a, b; Karageorghis et al., 2012).

In the neurophysiological setting, it has been exhibited that music impacts processes in the autonomic sensory system and could in fact be utilized to manage pulse and pulse (HR) (Schneck and Berger, 2006; Karageorghis and Cleric, 2012a, b). The focal sensory system is profoundly delicate to melodic prompts and its response is different, including muscle actuation, consideration, contemplations, conduct, and chief capabilities (Thaut, 2005; Thaut and Abiru, 2010; Altenmüller and Schlaug, 2013).

As for consideration, paying attention to music during active work has been portrayed in the writing as a dissociative mental methodology that empowers a change in consideration away from emotional encounters of distress or agony (De Nora, 2000; Rodriguez-Fornells et al., 2012; Altenmüller and Schlaug, 2013). It has been shown that as the power of activity increments, distress and related substantially sensations increment, evoking a more prominent consciousness of weariness related side effects (Karageorghis and Cleric, 2012a). On the other hand, when individuals are presented to natural tangible signs like music, varieties, or recordings, these prompts can redirect

The creators recommend that this might have happened in light of the fact that albeit the members realize that they were practicing hard, they were more joyful about the movement (Karageorghis and Minister, 2012a, b).

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consideration and adjust both way of behaving and substantial inconvenience sensations during exercise or different errands (Karageorghis and Jones, 2014; De Giorgio et al., 2018a, b).

As referenced beforehand, the writing depicts the limit of music to move the concentrate away from sensations of distress and weakness and this has been shown through the appraisal of the rating of seen effort (RPE). Specifically, it has been found that decreased RPE with music is related with low to direct power work out, however not focused energy work out (Harmon and Kravitz, 2007; Karageorghis and Minister, 2012b). The creators suggested that music appears to not be able to redirect consideration during exercise that is excessively serious with a serious level of substantial distress (for a survey see Karageorghis and Minister, 2012a, b). In spite of this, it was found that while the RPE during focused energy practice continued as before with or no music (NM), members experienced more sure temperament profiles while paying attention to music, paying little mind to practice force. The creators recommend that this might have happened in light of the fact that albeit the members realize that they were practicing hard, they were more joyful about the movement (Karageorghis and Minister, 2012a, b). In their writing audit, Karageorghis and Cleric (2012a, b) likewise featured the observing that prepared competitors are less impacted by the impacts of music contrasted with the people who are undeveloped. This could be a consequence of the training competitors definitely stand out enough to be noticed away from real uneasiness in any circumstance.

In any case, supposedly there have been no examinations to date that have connected the impact of two different activity types on the RPE under various music conditions. This study examined the RPE after low force and extreme focus work out, directed under various music conditions.

The social quests for playing and paying attention to music are incredibly boundless and nearly as old as human advancement itself. Music applications in actual work grew quickly during the 1970s and 1980s, mirroring the prominence of activity to-music classes in the western world. This development stretched out from gathering to individual activity while individual tuning in gadgets, for example, Nike's Individual Game Audio™ arrived at the mass market. During the equivalent period, music was coordinated into numerous expert games and added significantly to the brandishing scene. All the more as of late, since the approach of the iPod™, there has been an blast in music use by competitors during preparing and preceding contest, while endless a huge number of activity members have made music a fundamental piece of their consistent exercise routine.

The blast in the utilization of music by competitors and exercisers seemed to take analysts by shock. There was just a stream of observational exploration during the 1980s and 1990s, yet this stream has transformed into a stream during the current 10 years.

Instinctively, for a boost, for example, music to be involved consistently by such countless individuals for such

different purposes it should have a few advantages. Notwithstanding, quite compelling to conduct researchers is the dependability and reproducibility of any implied impact, the greatnes, and the possibilities that encompass it. For instance, is music as powerful during focused energy action for all intents and purposes during low power work out? Might music at any point give so a lot benefit for world class competitors as it seems to have for sporting members? What are the significant parts of the music determination process that expand its expected advantages? In addition, it is conceivable that music might affect actual execution other than to make apparently dull errands somewhat more pleasurable. This raises the extra inquiry of whether the new prevalence of music use by competitors is a marketing led peculiarity, as opposed to one that is grounded in certified mental and physical benefits.

Figuring out the Idea of Music

Any piece of music, whether it be jazz ad lib or an ensemble performed by the Berlin Philharmonic Ensemble, requires the association of a few essential components: song, amicability, mood, beat, and elements. Song is the tune of a piece of music, the part to which you could murmur or whistle along. To be sure many individuals allude to a piece of music as a "tune" which features the significance of this component. Congruity includes the blend of notes, which acts to impact the mind-set of the audience. The "sonic embroidery" that results when various notes are consolidated can encourage you, miserable, loose, or tense. The following time you watch a film, give specific consideration to how changes as one are utilized to control your feelings.

In numerous expert fields, music and game have become firmly connected, with the utilization of circle jockeys who select music that will motivate the players and connect with the group. In the most noteworthy echelons of advanced sport, the line between wearing undertaking and showbusiness has become obscured. Fans go to games and matches, not simply to help their most loved group, however to be engaged. As needs be, upgrades, like music, video, and lighting, have turned into a necessary piece of the wearing scene.

Impacts of Music in Sports

With regards to game and exercise brain science, scientists have fundamentally investigated the mental, psychophysical, psychophysiological, and ergogenic impacts of music.

Mental impacts allude to what music means for mind-set, effect, feeling, perspectives, insight, and conduct. The psychophysical impacts of music include tactile reactions to physiological cycles. In music-related research, impression of actual exertion are of specific interest and are most frequently evaluated utilizing appraisals of seen effort (RPE). The psychophysiological impacts of music connect with the impact of music on a scope of physiological boundaries (e.g., blood lactate, pulse, breath rate). Music applies an ergogenic impact when it works on actual execution by either postponing weariness or expanding work limit. Normally, this outcomes in higher-than-anticipated degrees of perseverance, power, efficiency, or strength. Overall terms, mood and rhythm

have been demonstrated to be the components of music probably going to provoke an actual response in the audience, mirroring their cozy relationship to different periodicities of human working, for example, heartbeat, breathing rate, and strolling (Bonny, 1987).

Discussion

Music insight includes both cortical and sub-cortical regions, however it meaningfully affects the entire cerebrum. Music impacts close to home reactions (i.e., the limbic framework), partner/programmed developments (i.e., the basal ganglia), coordination (i.e., the cerebellum), and the association and arranging of developments (engine, pre-engine, and strengthening engine regions). The cadenced examples of music work with blunder remedy and the execution of developments (Levitin and Tirovolas, 2009). Without a doubt, rehashed developments appear to be connected with the stages between beat music beats, invigorating an input/forward circle (Todd et al., 2002; Levitin and Tirovolas, 2009). Notwithstanding the inclusion of the entire cerebrum, music additionally influences the entire body and this impact happens through physiological excitement intervened by sub-cortical designs and real rhythms like strolling, breathing, and HR (Schneck and Berger, 2006; Levitin and Tirovolas, 2009; Altenmüller and Schlaug, 2013). Past examinations have exhibited that music directs processes in the autonomic sensory system and can be utilized to control the cardiovascular framework with respect to both HR and circulatory strain (Harmon and Kravitz, 2007; Murrock and Higgins, 2009; Karageorghis and Cleric, 2012a, b). Substantial enactment is vital in feeling weariness, as signs going from the body toward the cerebrum illuminate the last option on the work underway, tweaking active work accordingly. These signs catch cognizant consideration and can change conduct reactions connecting with practice adherence. Turns into These signs catch cognizant consideration and can change social reactions (De Giorgio, 2016) additionally connecting with practice adherence. Notwithstanding, music can be viewed as a valuable apparatus in controlling the power of physiological excitement and emotional encounters to further develop levels of actual work and exercise support (De Nora, 2000; Zatorre et al., 2007; Karageorghis and Minister, 2012a, b; Altenmüller and Schlaug, 2013). Without a doubt, with regards to game and exercise execution, De Nora (2000) examined how music can be decisively picked to instigate physio-mental reactions that lead to better execution, experience, and adherence to practice as well as managing temperament and moving consideration away from distress (De Nora, 2000). Our examination showed the distinctions in the impacts of standing by listening to music during focused energy and low force work out (i.e., perseverance work out). Perseverance practice appears to be more delicate to outside boosts (Van Cutsem et al., 2017) because of the psychological weakness and view of exertion associated with perseverance work out. Extreme focus preparing (i.e., dangerous exertion) appears to be portrayed by a hard and fast methodology that is controlled essentially by metabolic pathways through solid reproduction without the utilization

of oxygen (Van Cutsem et al., 2017). Thusly, "anaerobic" extreme focus preparing requires less dynamic cycles contrasted with perseverance work out, because of the full scale procedure and the inherently more limited term (Van Cutsem et al., 2017).

The outcomes allude to a genuinely prepared grown-up female populace. Therefore, these outcomes should be affirmed for different populaces like male subjects, undeveloped individuals, more established individuals, or youths. Moreover, music can't be portrayed just utilizing rhythm, yet additionally different qualities should be thought of as like verses, song, and classification. These qualities were not viewed as in this review, but rather they could impact the exhibition of the member. Additionally, the inclination of the members concerning their melodic inclinations were not gathered and thought about in the current review. At long last, the impact in the various snapshots of a similar activity was not considered as in past review (Di Cagno et al., 2016).

Conclusion

This research shows the advantages of paying attention to music under actual pressure conditions as well as during perseverance and focused energy preparing. The consequences of this study exhibit that the helpful impacts of music are more obvious for perseverance work out. Subsequently, music might be viewed as a significant apparatus to animate individuals participating in actual activity. The finding of this study underlines the efficacy of the rhythm of music in working on the exhibition and all the while decreasing the RPE during the activities. In light of this, it is vital to comprehend how this music impact can be utilized to further develop preparing burden and execution in prepared individuals.

References

1. Altenmüller, E., and Schlaug, G. (2012). "Music, brain, and health: exploring biological foundations of music's health effects," in *Music, Health & Wellbeing*, eds R. A. R. MacDonald, G. Kreutz, and L. Mitchell, (Oxford: Oxford University Press), 12–24.
2. Altenmüller, E., and Schlaug, G. (2013). Neurologic music therapy: the beneficial effects of music making on neurorehabilitation. *Acoust. Sci. Technol.* 34, 5–12. doi: 10.1250/ast.34.5 |
- Benke, G., Dimitriadis, C., Zeleke, B. M., Inyang, I., McKenzie, D., and Abramson, M. J. (2018). Is exposure to personal music players a confounder in adolescent mobile phone use and hearing health studies? *J. Int. Med. Res.* 46, 4527–4534. doi: 10.1177/0300060518760700 |
- Bianco, V., Berchicci, M., Perri, R. L., Quinzi, F., and Di Russo, F. (2017). Exercise-related cognitive effects on sensory-motor control in athletes and drummers compared to non-athletes and other musicians. *Neuroscience* 30, 39–47. doi: 10.1016/j.neuroscience.2017.07.059 |
- Bigliassi, M., Karageorghis, C. I., Wright, M. J., Orgs, G., and Nowicky, A. V. (2017). Effects of auditory stimuli on electrical activity in the brain during cycle ergometry. *Physiol. Behav.* 177, 135–147. doi: 10.1016/j.physbeh.2017.04.023 |
- Chamari, K., and Padulo, J. (2015). 'Aerobic and Anaerobic' terms used in exercise physiology: a critical terminology reflection. *Sports Med. Open* 1:9. |
- De Giorgio, A. (2016). From emotional education to collaborative intelligence. *Espressivamente*. 1, 16–41. ISSN 2239–4044. De Giorgio, A. (2017). The roles of motor activity and environmental enrichment in intellectual disability. *Somatosen. Mot. Res.* 34, 34–43. doi: 10.1080/08990220.2016 | |

- De Giorgio, A., Dante, A., Cavioni, V., Padovan, A. M., Rignonat, D., Iseppi, F., et al. (2017). The IARA Model as an integrative approach to promote autonomy in COPD patients through improvement of self-efficacy beliefs and illness perception: a mixed-method pilot study. *Front. Psychol.* 8:1682. doi: 10.3389/fpsyg.2017.01682 |
- De Giorgio, A., Kuvacic, G., Milic, M., and Padulo, J. (2018a). The brain and movement: How physical activity affects the brain. *Monten. J. Sports Sci. Med.* 7, 63–68. doi: 10.26773/mjssm.180910 |
- De Giorgio, A., Sellami, M., Kuvacic, G., Lawrence, G., Padulo, J., Mingardi, M., et al. (2018b). Enhancing motor learning of young soccer players through preventing an internal focus of attention: the effect of shoes colour. *PLoS One* 13:e0200689. doi: 10.1371/journal.pone.0200689 |
- De Nora, T. (2000). *Music in Everyday Life*. Cambridge: Cambridge University Press.
- Di Cagno, A., Iuliano, E., Fiorilli, G., Aquino, G., Giombini, A., Menotti, F., et al. (2016). Effects of rhythmic and extra-rhythmic qualities of music on heart rate during stationary bike activities. *J. Sport Med. Phys. Fit.* 56, 1226–1231. |
- Harmon, N. M., and Kravitz, L. (2007). The beat goes on: the effects of music on exercise: a review of the research on the ergogenic and psychophysical impact of music in an exercise program. *IDEA Fit. J.* 4, 72–77. |
- Hou, J., Song, B., Chen, C. A. N., Sun, C., Zhou, J., Zhu, H., et al. (2017). Review on neural correlates of emotion regulation and music: implications for emotion dysregulation. *Front. Psychol.* 8:501. doi: 10.3389/fpsyg.2017.00501 | |
- Hutchinson, J. C., Jones, L., Vitti, S. N., Moore, A., Dalton, P. C., and O'Neil, B. J. (2018). The influence of self-selected music on affect-regulated exercise intensity and re-membered pleasure during treadmill running. *Sport Ex. Perf. Psychol.* 7, 80–92. doi: 10.1037/spy0000115 |
- Innes, K. E., Selve, T. K., Kandati, S., Wen, S., and Huysmans, Z. (2018). Effects of mantra meditation versus music listening on knee pain, function, and related outcomes in older adults with knee osteoarthritis: an exploratory Randomized Clinical Trial (RCT). *Evid. Based Complement. Alternat. Med.* 2018:7683897. doi: 10.1155/2018/7683897 | |
- Jarraya, M., Chtourou, H., Aloui, A., Hammouda, O., Chamari, K., Chaouachi, A., et al. (2012). The effects of music on high-intensity short-term exercise in well trained athletes. *Asian J. Sports Med.* 3, 233–238. |
- Jing, L., and Xudong, W. (2008). Evaluation on the effects of relaxing music on the recovery from aerobic exercise-induced fatigue. *J. Sports Med. Phys. Fit.* 48, 102–106. |
- Karageorghis, C. I., and Jones, L. (2014). On the stability and relevance of the exercise heart rate–music-tempo preference relationship. *Psychol. Sport Exerc.* 15, 299–310. doi: 10.1016/j.psychsport.2013.08.004 |
- Karageorghis, C. I., and Priest, D. L. (2012a). Music in the exercise domain: a review and synthesis (part I). *Int. Rev. Sport Exerc. Psychol.* 5, 44–66. doi: 10.1080/1750984X.2011.631026 | |
- Karageorghis, C. I., and Priest, D. L. (2012b). Music in the exercise domain: a review and synthesis (part II). *Int. Rev. Sport Exerc. Psychol.* 5, 67–84. doi: 10.1080/1750984X.2011.631027 | |
- Karageorghis, C. I., Terry, P. C., Lane, A. M., Bishop, D. T., and Priest, D. L. (2012). The BASES expert statement on use of music in exercise. *J. Sports Sci.* 30, 953–956. doi: 10.1080/02640414.2012.676665 | |
- Koc, H., and Curtseit, T. (2009). The effects of music on athletic performance. *Ovidius University Ann. Series Phys. Educ. Sport Sci. Movement Health* 9, 43–47. |
- Levitin, D. J., and Tirovolas, A. K. (2009). Current advances in the cognitive neuroscience of music. *Ann. N. Y. Acad. Sci.* 1156, 211–231. doi: 10.1111/j.1749-6632.2009.04417.x | |
- Migliaccio, G. M., Dello Iacono, A., Ardigo, L. P., Samozino, P., Iuliano, E., Grgantov, Z., et al. (2018). Leg press vs. smith machine: quadriceps activation and overall perceived effort profiles. *Front. Physiol.* 23:1481. doi: 10.3389/fphys.2018.01481 | |
- Mohammad Alipour, Z., Mohammadkhani, S., and Khosrowabadi, R. (2019). Alteration of perceived emotion and brain functional connectivity by changing the musical rhythmic pattern. *Exp. Brain Res.* 237, 2607–2619. doi: 10.1007/s00221-019-05616-w | |
- Murrock, C. J., and Higgins, P. A. (2009). The theory of music, mood and movement to improve health outcomes: discussion paper. *J. Adv. Nurs.* 65, 2249–2257. doi: 10.1111/j.1365-2648.2009.05108.x | |
- Padovan, A. M., Oprandi, G. M., Padulo, J., Bruno, C., Isoardi, M., Gulotta, F., et al. (2018). A novel integrative approach to improve the quality of life by reducing pain and kinesiophobia in patients undergoing TKA: the IARA Model. *Muscles Ligaments Tendons J.* 8, 93–103. doi: 10.11138/mltj/2018.8.1.093 |
- Padulo, J., Chamari, K., and Ardigo, L. P. (2014). Walking and running on treadmill: the standard criteria for kinematics studies. *Muscles Ligaments Tendons J.* 14, 159–162. |
- Padulo, J., Laffaye, G., Chaouachi, A., and Chamari, K. (2015). Bench press exercise: the key points. *J. Sport Med. Phys. Fit.* 55, 604–608. |
- Padulo, J., Migliaccio, G. M., Ardigo, L. P., Leban, B., Cosso, M., and Samozino, P. (2017). Lower limb force, velocity, power capabilities during leg press and squat movements. *Int. J. Sports Med.* 38, 1083–1089. doi: 10.1055/s-0043-118341 | |
- Rodriguez-Fornells, A., Rojo, N., Mengual, J. L., Ripolles, P., Allenmüller, E., and Münte, T. F. (2012). The involvement of audio-motor coupling in the music-supported therapy applied to stroke patients. *Ann. N. Y. Acad. Sci.* 1252, 282–293. doi: 10.1111/j.1749-6632.2011.06425.x | |
- Schneck, D. J., and Berger, D. S. (2006). *The Music Effect: Music Physiology and Clinical Applications*. London: Jessica Kingsley.
- Tabei, K. I., Satoh, M., Ogawa, J. I., Tokita, T., Nakaguchi, N., Nakao, K., et al. (2017). Physical exercise with music reduces gray and white matter loss in the frontal cortex of elderly people: the miyama-kiho scan project. *Front. Aging Neur.* 7:174. doi: 10.3389/fnagi.2017.00174 | |
- Terry, P. C., Karageorghis, C. I., Mecozzi Saha, A., and D'Auria, S. (2012). Effects of synchronous music on treadmill running among elite triathletes. *J. Sci. Med. Sport* 15, 52–57. doi: 10.1016/j.jsams.2011.06.003 | |
- Thaut, M. H., and Abiru, M. (2010). Rhythmic auditory stimulation in rehabilitation of movement disorders: a review of current research. *Music Perc.* 27, 263–269. doi: 10.1525/MP.2010.27.4.263 |
- Todd, N., Lee, C., and O'Boyle, D. (2002). A sensorimotor theory of temporal tracking and beat induction. *Psychol. Res.* 66, 26–39. doi: 10.1007/s00426010007 | |
- Van Cutsem, J., Marcora, S., De Pauw, K., Bailey, S., Meeusen, R., and Roelands, B. (2017). The effects of mental fatigue on physical performance: a systematic review. *Sports Med.* 47, 1569–1588. doi: 10.1007/s40279-016-0672-0 | |
- Weir, J. P. (2005). Quantifying test-retest reliability using the intraclass correlation coefficient and the SEM. *J. Strength Cond. Res.* 19, 231–240. doi: 10.1519/15184.1 | |
- Zatorre, R. J., Chen, J. L., and Penhune, V. B. (2007). When the brain plays music: auditory-motor interactions in music perception and production. *Nat. Rev. Neur.* 8, 547–558. doi: 10.1038/nrn2152

किताब प्रकाशन के लिए आमंत्रण
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Musical Aura Of Hazrat Amir Khusrau In Delhi Sultanat As Gleaned Form His Works

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Amir Khusrau (1253-1325 AD) the famous Sufi poet-musician, whose formal name was Abul Hassan Yamin-ud-din Khusrawa, was born in Mominpur, now known as Patiali, situated in district of Etah (Uttar Pradesh) (Mirza, p.22). Khusrau was an accomplished musician. And no one after him has been able to obtain the title of Naik a perfect master of music (Habib, 293). He has contributed significantly in the field of Sufism, qawwali and Indian classical music. "His ancestors were Turks but he called himself a Hindu Turk and was fluent in Hindi as well as Persian" (Holroyde, p.182). He calls himself "Elegance of the assemblies", "comrade of the Maliks", "companion of the Maliks", companion of the Sultans, 'Amirush - Shadi, and so on (Sarmadee Shahbab, pp. 246-47). "Amir Khusraurepresent the first great musicologist. He was a music composer and expert in music theory." (Alam, p.113). For Fatimi, the main factor in Khusrau's cultural influence was his self-conscious affection for India, and all things Indian.

Amir Khusrau had extraordinary inclination towards poetry and was also adept in the art of music. Music was his favourite pastime so he took part in musical contests where motley of artists and merry making spectators gathered together (Sabahuddin, 3). Amir Khusrau was an excellent prose writer and he is credited to have written a number of prose works which includes five diwans, five historical mathnavis and three prose works.

Amir Khusrau witnessed the reign of many Delhi Sultans and spent a greater part of his life in Delhi. Kishlu Khan, nephew of Sultan Balban, first patronized Amir Khusrau. Sultan Kaiqubad also gave patronage to Amir Khusrau and he became the king's poet-laurate. It is noted that his concerts were so full

of beautiful females and singers that anyone who attended once wanted to repeat the experience to the exclusion of everything else (Wadhwa, p. 25).

Khusrau rose high in the court of Jala-ud-din Khilji, who account on his gentle nature treated Khusrau with great honour and generosity (Sabahuddin, p. 4). In his work Miftahul Futuh (Key of conquests) which deals with account of Jalauddin's campaigns, indicates the Jalaluddin's inclination towards music as he observes when Jalaluddin after the campaigns entered "the city of Delhi it was decorated and music and entertainment program were arranged." (Khusrau, Miftahul Futuh quoted in Rizvi, p.154). The deep interest of the Sultan in music can be judged by the various musicians who adorned Jalauddin's court like Muhammad Shah Changi (the player of Chang), Futuha (daughter of Fiqui), Nusrat Khan and Mehur Afroz.

Another Masnavi of Khusrau Deval Rani Khizr Khan describes in detail the marriage of Prince Khizr Khan (Alauddin's son) which continued for three years and provides details of the musical concerts. It provides us with reference to Hindustani instruments like Tumbak, Chang, Duff and Tal being played. The musical note of Chang was high pitch and that of Barbak was low. (Rizvi, p.173). It is with such precise details that Amir Khusrau has enriched our knowledge about music during the time of Delhi Sultanat. In his account he also suggests words of caution that "Music, songs and other amusements should be indulged in with moderation, for too much devotion to the songs of David is sure to ruin Solomon's throne" (Habib, 322).

Nuh Sipihr is another historical masnavi which is divided into 9 chapters each dedicated to the

The third siphir is of significance as it establishes India's superiority over other nations. The musicians of India are glorified in the below couplet:

"When the Hindu musician plays on the Alawan (Sitar), my veins vibrate like the strings of a musical instrument" (Nuh Siphir , Quoted in Nath, 114)
"O Singer ! Sing a song which may captivate my heart. The Pathos of your song will relieve me of pain and sorrow
O my friend! You can cure my ailing heart. Fascinate it by The sweetness of your Raga Ramakali.

If you want me to suggest a Ghazal to you for singing, here Is one in Persian which you may sing in Hindi style." (Nuh Siphir, Quoted in Nath pp. 114-115)

Further the supremacy and accomplishments of the Indian musicians are established over those of the foreigners. The following verses attests to the above statement:

"Musicians have come to India and they introduced some new features to it. They learnt Indian music and lent tempo to it. Infact, they became proficient in this Art and made their own contribution to it. But this was possible only after they stayed in India for more than 30-40 years. However the foreigners could not anything to the basic principles of Indian music. (Nuh Siphir, Quoted in Nath p.61)

Music and its effects are contextualized both with animals and the humans. The supremacy of Indian music is established when he contrasts the aftermath of music on the animals. He suggest that Arabian music has no effect on animals like camel whereas the deer becomes senseless to the point of death. Here follows the description:

" Music is so sweet that it captivates the wild deer (and attracts it) even in the face of hunter's arrow. When wild deer hears the sound of sweet music , it stands hypnotized by its effect. When the Hindu musician finds the deer standing helplessly hypnotizes, out of compassion he bids him to move away (Nuhsiphir, Quoted in Nath, p.61)

Like Jalaluddin, his nephew Alauddin Khalji was a great patron of music. Ziauddin Barani registers that the Sultan after his victories when he returned to Delhi honored singers and jesters (Rizvi, p.44). Further to celebrate his victories he ordered the playing of Dhol and Nakkara. (Rizvi, pp. 44, 46, 91, 95).

The most productive period and where the genius of Amir Khusrau was reflected was in five romantic masnavis- called Panj Ganj were dedicated to Nizam -ud-din Auliya and presented to then reign-

the significant being Khazainul Futuh (account of Alauddin's wars) and Ijaz-i-Khusravi (The miracles of Kusrau) which was along work in five volumes on figures of speech and consists of 1179 pages.

There is a chapter on music in Ijaz. An analysis of chapter reveals that Khusrau was fully aware of the technique and procedure of the music along with its notes, principal and secondary modes, melodic moulds, rhythmic patterns, differentiation in the fundamental and the subsidiary principles of music. (Rahman, p.73.)

The various works composed by Khusrau give us a glimpse of music and its state. Amir Khusrau call himself 'Amir ut- Tayyur (Head of the flying bird) In one of his poetry he makes reference:

The clanking of Majnun's chains is organ music for lovers, a music the prudent don't have the ear to taste. (Losensky, Poem 12)

Here and there musicians lay unconscious, The harp at rest from its twanging, the lute's lament mum. (Losensky, Poem 30)

On being questioned by a minstrel as which among the two is nobler, science of music or the art of poetry Amir Khusrau replied:

I am an expert in both fields, so it is proper that I be the judge in this matter.

I composed three books of poetry- that, in fact, are three books of music.

I will describe the difference truly for one who is judge of such things.

Music thus requires both voice and melody, poetry needs only a connoisseur of words

Poetry is the bride and song her ornament. (Losensky, Poem 51)

Amir Khusrau made significant contribution in Hindustani music. He made a bold change by replacing the old murchchanas by the 22 Persian moquams which were "groups of 12 notes necessary for rendering proposed ragas". This grouping known as the Mela Kartas in Karnatic music, was adopted into the Hindustani system and called the Thats. (Misra, p.4)

"He worked on the three-stringed tritantri veena until it became the modified sitar, the Persian word 'sehtar' meaning the same thing" (Holroyde, p.169).

The cultural activities of the Indo-Turks are particularly the subject of discussion in Khatt 9 altogether designed to deal with the art of living of the elite, the majlisihunar (Sharma, xxvi)

The Ijaz also refers to a large number of musical instruments prevalent during that time like Chang, Tambur, Rud, Barbat, Rubab, Duff, Nay, Alawan, Kingra, Shahnayi, Miskat, Nawalal, Khistit, Surfi, Ajabhurd, Ud and Baitara Hindi etc. Khusrau also had knowledge of the instruments as described "the Chang can moisten the universe with its dewy melody, the duff can tune-heat the sun with its rhythmic energy and the Nay can stir the souls of the aesthetic" (AbdurRehman, p. 75).

Amir Khusrau provides description of Turmati Khatun appointed as Amir-i-Mutriban. She also headed the entire team of musical performers Indian and Turko-Persian, string players, percussionists and mouth-blowers, male as well as female including those belonging to the dance troupe. (Sharma, p. xxviii).

The special gatherings which characterized the cultural and social spaces of Delhi Sultanat witnessed the assemblage of a number of musicians like the "Ustads from Bakharz and Nihavand as well as from Siphahan and Iraq and that all of these composed and sang in Persian and were far superior to the performers from the lands of the Arabs" (Sharma, p. xxvii). He provides the comparative features of the Indian and the Persio-Arabian systems of music. He does not hesitate in extolling the Hindu performers who with their alawan (a type of vina) were more proficient as compared to their Khurasani counterparts.

Any chang player, learning his first grip
Over the instrument,

Does every time come to learn from us
The latest subtleties of the art

This voice of ours- soaring high in resonant
sonority- surpasses Venus, comes down to. Break in
minute subtleties even when scratched
Oh, what a beauty, how well done,
This high-pitching of words
My voice coming down
Broke into particles (of melody)

There are references to the musical competitions as well between "the Hindustani and the Khurasani masters of music from Bakharz and Farghana took place" (Sharma, p. xxxi).

When extolling the musicians he self-eulogizes himself as well. He reveals that:

Poets, composers and singers rise from this
land as abundantly and as naturally as grass. Most of
them are good poets and singers. They know the
innermost secrets of their art and their compositions

are full of subtle meanings. Each poet and singer has his unique way of expression and among them Khusrau is the humblest. (Nath, p.44). He prided himself on being vocalist of a very high order; an instrumentalist or a percussionist and, so to say, always to play second fiddle to him. (Sarmadee Shahab p.248). By crossing some Indian modes with Persian Moquams, he created a large number of delightful new ragas such as Yaman (Persian Al Yaman blended with the Indian Kalyan) kafi, Bhaar, Zeelaph, Sanzgiri, Sarpada, Ushaq and Muhaiyir (Misra, p.5). The eloquence and sweetness of his verses soon earned him the title of Tuti-i-Hind. Khusrau himself alludes to this title Tuti-i-Hind in the Nuh Siphir "O God, you have created Khusrau like a Tuti in this garden of Hindustan" (Ahmed, p.86).

Amir Khusrau seems to be one of the few poets who was simultaneously a court poet in the business of praising kings as a Sufi poet whose poems were performed in a mystical context. Amir Khusrau was deeply devoted to his pir, Hazrat Nizamuddin Auliya and a large number of his compositions are influenced by Sufi mysticism. He is generally considered the founding father of Qawwali and of Qawwali performers. Qawwali is a poetical and musical form formalized by Amir Khusrau in the thirteenth century from different musical traditions. "Aqawwal session, a rite of spiritual hearing called mahfil-e sama, is traditionally directed by a Shaikh. Khusrau's beloved mystical verses and musical settings constitute the core repertoire of the shrine's hereditary performers, the Qawwal Bachche. Qawwali music consists essentially of songs, musical settings of poems. The 'tunes' (dhun, bandish, tarz) of these musical settings are the repertoire of Qawwali music". (Qureshi, p. 19) "Musically, the Qaul is set to a version of raga shudhkalydn which the Qawwal Bachche consider authentic, since the raga is likely to have changed over time while the Qawwali hymn tune has been carefully preserved and passed on in an unbroken succession of hereditary shrine performers" (Qureshi p.22). One role of Qawwal Bachche performers has been to preserve intact original Qawwali song melodies composed by Khusrau, and pass them down through the centuries in an oral tradition which survives to this day (Newell, 141)

Regula Qureshi has considerably researched on the oral tradition at the Nizam al-Din Awliyadargah in Delhi which speaks to his role in the development of the art of Qawwali.

Khusrau is often credited with integrating Arab-Persian musical elements into North Indian music (Askari, 1969). It is said that Indian music, the fire that burns heart and soul, is superior to the music of any other country. Professor S. Q. Fatimi (1975) has examined at length Khusrau's own statements regarding music, collated them with the writings of two of Khusrau's contemporaries, Abu Fazl and 'Abd ul-Hamid, and then compares these with certain accomplishments popularly credited to Khusrau. Fatimi agrees with others that Khusrau was a force in the integration of some Persian and Arabic elements into North Indian music. Although there have been a number of misattributions to Khusrau, Fatimi's research affirms that Khusrau played a role in bringing together Persian and Indian musical forms and ideas. (Fatimi, p.27)

Although this tendency no doubt influenced Khusrau's approach to musical performance and composition as well, Fatimi does not see Khusrau as an inventor of musical styles and form. Khusrau was an inspiration to musicians at court, and in Delhi at large. He encouraged an atmosphere of aesthetic syncretism and creativity which allowed other musicians to compose and perform music in new ways. Finally, Fatimi, citing archeological evidence, rejects the idea that Khusrau could have invented either the tabla or the sitar. There still exist carved panels, found in Northern India, dating to a thousand years before Khusrau was born, which clearly depict images of both instruments. S. Q. Fatimi (p. 25) concludes, that, while Khusrau's influence has been significant in the development of Indian classical and light classical music, a number of misunderstandings have occurred. Specifically, Fatimi's study finds that Khusrau initiated the singing of Arabic and Persian verses and phrases in the most popular Hindwi raga of his times, namely, dhurpadin ektala (single tal), ardha-chautala (duple tal), tintal (triple tal), and chautala (quadruple tal). Also he mixed the Persian musical idioms, namely, samitand tatar with the above-mentioned Hindwiraga. Moreover the time of Akbar this new form of music was in vogue only in Delhi and was known as the Delhi style of singing dhurpad raga; and it was called qaul which was originally the term for the most popular Persian form of music.

Khusrau's role in the sama' of Nizam al-Din Awliya is equally unclear. There is no question that he composed numerous devotional poems dedicated to his shaykh. Many of these remain in circulation and

are still sung at mahfil throughout South Asia. According to S. Askari there is evidence in Khusrau's own writings, however, that his poetry was often given to other musicians, who put them to music themselves. It is impossible to know how many of the existing compositions actually originated with Khusrau, although the Qawwal Bachche have preserved several which are widely regarded as the most authentic versions of melodies composed by Khusrau. The exact nature of the sama' programs held by Nizam al-Din is also unclear, further obscuring what we may know about Khusrau's role in them, and in early Qawwali. That Nizam al-Din held sama' programs is well documented. The gatherings created much controversy, even at one point resulting in Sultan Ghyas al-Din Tughluq convening a meeting of religious scholars to discuss the matter. Nizam al-Din himself was known to fluctuate on his position regarding the use of musical instruments in sama'. For this reason special band sama' assemblies are still held at dargah in Delhi, during which no instruments are used (Qureshi 1995). It seems most likely that Khusrau may have sung his devotional compositions for Nizam al-Din, but performed his syncretic compositions outside of the sama' context.

Khusrau also proclaims that he is a theorist too. Ziauddin Barani also praises amir Khusrau for the various songs and ragas. Amir Khusrau "could let others know the secrets of usul based on four, the pardas based on twelve and ibresham (strings) based on six. He says that the rest is the branch modes (furu) derived from them. (Abdur Rehman, 74).

Amir Khusrau's contribution to Indian music can be gleaned from his innumerable prose and poetical writings which refer to various significant melodic and rhythmic notes, musical instruments in its varied forms. His works remain till date as "source of knowledge about musical forms, musicians and dancers performing, musical assembly of princely court (shahi-majlis) and the religious set up of Sufi kanqah (majlis-i-sama)" (Alam, 113).

References :-

1. Abdurrahman, Sahabuddin. (1982). Amir Khusrau as a Genius. Delhi: Idarah-i Adabiyat-i-Delhi.
2. Alam, Muzaffar, F 'Nalini' Delvoye and Marc Gaborieau, (eds.) (2000). The Making of Indo- Persian Culture: Indo- Persian Culture :

- Indian and French Studies. Delhi: Manohar.
3. Askari, Syed Hasan, (1975). Material of Historical Interest In Ijaz-i- Khusravi, Medieval India:A Miscellany,vol.1,no.4, pp.1-20 .
 4. Askari,Syed Hasan, (1992). Amir Khusrau as a Historian.Patna :Khuda Baksh Oriental Public Library.
 5. AlhamdAyaz.(1982). "Amir Khusrau- The Tuti-i- Hind." Indo -Iranica, Vol.24. no.3;pp.82-95.
 6. Fatimi, S. Q. (1975). Amir Khusrau's Contribution to the Indus-Muslim Music. Islamabad: Pakistan National Council on the Arts.
 7. Habib, Mohammad, (1974) Hazrat Amir Khusrau of Delhi. In K.A.Nizami,(ed.) Politics and Society during the Early Medieval Period, Vol.1 ,Delhi: People's Publishing House.
 8. Khusrau, Amir, MiftahulFutuh, Trans into Hindi (2008) Sayyid Athar Abbas Rizvi . Khilji Kaleen Bharat.
 9. Losensky,P.E. and Sunil Sharma (2010). In the Bazar of Love , The Selected Poetry of Amir Khusrau, Trans. New Delhi: Penguin Books.
 10. Mirza, Muhammad Wahid.(1935). The Life and Works of Amir Khusrau. Calcutta: Baptist Mission Press.
 11. Nath,R and Gwaliari, Faiyaz (1981) .India as seen by Amir Khusrau (in 1318 A.D.), English Translation of Chapter III (of Masnavi-i-NuhSipih). Jaipur: Historical Research Documentation Programme.
 12. Qureshi, R. B. (1995). Sufi Music of India and Pakistan: Sound, Context and Meaning In Qawwali. Chicago: University of Chicago Press.
 13. Peggy Holroyde (1972).Indian Music . London and New York: Routledge
 14. Sarmadee Shahab, (1975) 'Khusarau and Indian Music' in Ansari, Zoe (ed.). Life , Times and Works of Amir KhusrauDehlavi, published by Hasnuddin Ahmad, New Delhi: National Amir Khusrau Society.
 15. Sharma,Prem Lata and F 'Nalini' Delvoye (ed.) (2003) Amir Khusrau's Prose Writings on Music in Ijaz-i-Khusrawi, Trans. Shahab Sarmadee. New Delhi. ITC Sangeet Research Academy.
 16. Wadhwa, Nisha (2015) Indian Music During Delhi Sultanate Period (13th to Early 16th century), New Delhi. Kanishka Publishers, Distributers.



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Positive correlation between music and science

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Abstract

Aim of the study was to find out positive relation between music and science. It was hypothesised that music and science will be positively correlated.

Introduction: Music layout the musical score of our lives which can be invoke passion and motivate any one to dance, move or sing. Music is also established in science where sound is manufactured with some vibrations and those vibrations are herd in ears as sound waves. The difference in pitch, tempo, volume and rhythm are mathematical. The science of sound reminds us to listen and feel the vibrations. Music and science are two sides of a coin. It is an art as well as science. Music as art is innovative thought process and artistry to achieve the desired aim. On the other hand science implement interaction and investigation to create latest scientific findings. Music couple these two different establishment in a very close associative alliance. This paper tells the analytical and critical study of musical and scientific collaboration to sum up music as art and science. The defence is prepared on qualitative assessment of information drawn from related sources and literature. The ultimate **Conclusion** tells that music students who were playing music or engaged in musical activities secured better grades in science and music maintains a great harmony with science.

Keywords: Music, pitch science, vibration rhythm

Introductions

The correlation between music and science is very ancient. The oldest discovered musical instrument found is flute, made of hollow bear bone (45,000 years old) which was found in Slovenia in 1995. The complete instrument which can be played i.e. small flute made of hollow bird bone about 9000 year old was found in China in the year 1999.

Music as Science and Art

Music is an art and science as well. Music and science are very closely related. Both are logical and based on mathematical principles. These are amalgamated with innovative thinking and artistry to reach at conclusions that are illuminative and inspiring. Science can be expressed as the Music of intellect and Music as the Science of Heart. Music is Mathematics, its composition is actually a mathematical exercise. A galaxy of musical expressions and emotions as well as basic source of rhythms, tempos and sounds can be created. It is the interplay of tempo, sounds and pitch that produce music. It is just like the interaction of well-known knowledge and facts mixed with fascination, belief and innovation creates latest scientific findings. Both Music and Science use a certain technique and hypothesis to come out with concrete solution and answer the untouchable enigma of life.

There are numerous theories base on scientific principles which endeavour to describe melody. All the above explanation is enough to indicate that music is a very diverse and complex in nature as any scientific theory or principle. Some has hypothesised that music is the father of mathematics. Science educate us regarding sound is vibration and variety of sounds are made by frequency of vibration. It can said that Music is the study of sound formed by the vibrations which are then put into variety of patterns which in turn bring out emotions. Music has its basis on maths and the mathematicians see mathematics as music of the intellect.

Human Civilization and Music

Music played a vital role in civilizing the human race. Music is not just a melodious set of noises but it is a bridge between languages and cultural heritage. Music is path of discovering harmony not only within community but serves as a bridge to join with other communities and societies. Music is the common human common divisor. All cultures have it and share it with each other.

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There are so many scientific speculations in regard to music and its evolution but there is a gap of scientific explanation of music. Music is a feeling of emotion with unexplained abstract that is distinctively human is. It is a power that can connect people even separated by different miles, cast, cred, culture or diversification. Science has power to unfold many unseen but it, alone cannot originate them. Science has the ability to describe music but intelligence and passion can create it.

Music and Scientific Patterns

Music and science correlation is natural. Scientists are very good in studying patterns and very comfortable with mathematics and music is systematic and scientific patterns and simple maths. It is very important to understand science and not just music. Many says that music needs imagination, emotions and will to create it and implementation of the music theory requires practice, impulse and felicity. This is also true in science that an initial stroke of innovation is required to get going. The hardest part sometimes can be the initial spark and then music can flow very freely. The musical calculations and data collection are followed after that initial start.

Beauty of Music and Science

Possibly the closest similarity is between the musician and scientist. There is a very unique and strange contradiction in both. The nucleus of work i.e. the preparation, the execution, the trials, the weeks and months of computation and reviewing is very personal and private. In the collaborative research work or playing music in bands the preparation are isolating and personal. The best part is when the result is out may be in form of publishing of paper, presentation in seminar or conference, playing an assignment or releasing an album- its public. The success of the event is assessed by being public. There might be so many questions before publishing the paper of being peer-reviewed or people liking the music or the fear of stage of being fail, the public and private duplicity is obvious and can be difficult to deal in both science and music. It cannot be accidental that both science and music are intended towards the mental health and there is the shared joy of fulfilment. The best appealing part of music and science is because they are beautiful.

Intellectual connection of Science and Music

A great mathematician said 'It is the logic that prove, but with institution that we discover'. These lines were said in context of underlining the inbuilt component of imagination and creativity required for discovery which suggests that science is in fact is a form of art. For over a very long period of time science has been separated from art through the prevailing belief that is very well defined and clear. It is a fact that like any language, science is based on some rules and it is evident to the fact that science is an art can be seen in music. It is now long thought that music and science are related. It is a notion that many exceptionally talented person shined both in music and science. Many papers published in journal found that the students who were playing music or engaged in music activities secured better grades in science. There are many studies that showed that students engaged in music were on average, one year ahead in academics, specially vocal and instrumental music.

It is very fascinating that studying music, students are able to do much better academically then their peers. The effects of music and their beneficial result on academic performance depends on many factors. It is very essential to note that music requires a considerable amount of time commitment which can be compared to that of science or mathematics classes where students often study lengthy problems, time spent in laboratories or try to understand mathematical proofs. Many researchers has also cited that the engagement in music aids in developing learning routines and enhances motivation. It can be attributed to the fact that learning to play music is not done overnight, it is rather a very slow and conscious process which consume years to master. Thus it can be said that habits acquired from leaning to master the music helps in other areas of life and science and thus helps to excel in life.

Endnote

Music and science are very similar in many ways. They are uncommon among all human activities on the foundation of pervasiveness and antiquity. Music teaches us about the human brain and brain teaches about the music and combine they teaches us about our own selves. Music and brain are interrelated in which music remains all part of our brain. The energy of music to elicit emotion is also very much advertised by everyone. Music is related to maths as there are certain rules and regulation likewise music is also learned. The better understanding about music will be able to understand the desires and motive and will help to enhance the communication.

References

1. Agbo B, Keke MTO. The psycho-spiritual dimensions of musical performance: A case study of Ikorodo & Owambe traditional music of Nsukka people. *Journal of the Association of Nigerian Musicologists. (JANIM)*. 2013;7:259-271.
2. Agu DCC. Traditional music education and national development: The Igbo child experience. *Alvan Journal of Music and Humanities*. 2010;111(1):53-62.
3. Catterall JS, Rauscher FH. Unpacking the impact of music on intelligence. In W Gruhn and FH Rauscher eds. *Neurosciences in music pedagogy*. Nova Science Publishers, New York, 2008, 171-201.
4. Cheek JM, Smith LR. Music training and mathematics achievement. *Adolescence*. 1999;34:759-761.
5. Coffman DD, Adamek M. The contribution of wind band participation to quality of life of senior adult band members. *Dialogue in Instrumental Music Education*. 1999;20(1):25-34.
6. Davidson JW, Good JMM. Social and musical coordination between members of a string quartet: an exploratory study. *Psychology of Music*. 2002;30:186-201.
7. Hoffman DS. Relationships between Academic Achievement and Participation in a comprehensive and sequential keyboard-based public school music education programme. Doctoral Dissertation, University of South Carolina. *Dissertation Abstracts International*. 1995;56(06):2161A.
8. <https://www.bnbusinstruments.com/blog/the-relationship-between-music-and-science>
9. https://www.crick.ac.uk/news/2019-01-23_science-and-music-whats-the-connection

10. <https://www.forbes.com/sites/annapowers/2019/06/30/new-research-suggests-that-studying-music-helps-excel-in-science>
11. <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.01902/full>
12. <https://www.news-medical.net/news/20190124/Exploring-the-connection-between-science-and-music.aspx>
13. <https://www.sciencedaily.com/releases/2019/06/190624111504.htm>
14. <https://www.slideshare.net/DammarSaud/music-and-science-72563930>
15. Ibekwe EU. Children's folk songs in Igbo society. Germany: Lambert Academic Publishing. (LAP), 2018.
16. Kapoor Y. Music and science (Internet sources, assessed 26th June 2018). 2016.
17. Kumar N, *et al.* The effect of listening to music on concentration and academic performance of the student: Cross-sectional study on medical undergraduate students. *Research Journal of Pharmaceutical, Biological and Chemical Sciences.* 2016;7(11):1190-95.
18. Maruani J, *et al.* Science and Music: From the Music of the Depths to the Music of the Spheres, *Advanced Topics in Theoretical Chemical Physics*, 2003, pp. 479-514.
19. Merriam AP. *The Anthropology of Music.* USA: North Western University Press, 1964.
20. Nettl B. *Theory and Method in Ethnomusicology.* New York. Schirmer Books: A Division of Macmillan Publishing Co. Inc. 1964.

A study on advantages of Music Education in Children

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Abstract: *The children prepare rigorously for their career advancement as part of their education. All the education systems strive very hard to execute mandated standards to assist children to excel in testing and help them to gain important skills to thrive for future job opportunities. In this valuable pursuit the schools and educational institutes cut many creative programs of music and art from the curriculum without realizing that such programs can bring positive impact on the holistic development of kids. Music directly gives advantages in leaning words, speaking correctly and process sounds they hear from here and there. Music can be very easily stored in our memory and that can help children to memorize things easily. Playing any musical instrument enhances the hand eye coordination. Children work together to form a cohesive and technically correct musical performance that for a community of same thinking individuals who can help each other to reach their goals in life. For the same Music education can the best and progressive channel to promote learning in children. Music Education in India Schools are not taken so seriously, but very few know that music education in India can help to boost the mental development of children specially at early stage of life.*

Key words: *Career, Music, Boost, Physical, Performance, Progressive*

Introduction

Education plays a very vital role in honing the thought process of a person and the habit of being aware, alert and conscious of an individual's duties and responsibilities is induced through quality education, during the early years of formal education. Parents, teachers and educational institutes/societies are relentlessly working toward the child's requirement to be presented with great opportunities to enlarge their brains and to be open to learning by

enhancing education through different channels. For the same Music education can the best and progressive channel to promote learning in children. Music Education in India Schools are not taken so seriously, but very few know that music education in India can help to boost the mental development of children specially at early stage of life.

Music Education is the way forward
There are infinite advantages associated with music education. No

one can deny the fact that learning music enhances the learning abilities in children and those are inevitably used in other characteristics of life as well. Music helps to enhance the grasping power of a child and the science says that the rhythms associated with music help in contraction and expansion of the cerebrum walls which helps the kids to memorize the things easily. It is also known fact that the musical instruments require the use of both hands and the nerves connected with the hands help in activating regulation in both left and right hemisphere of the brain. The improved regulation of both the hemispheres of brain automatically enhances the academic performance in children. These advantages adds to improve the child's morale, zest toward studies, focus and concentration which in turn improves the attendance of the child and that leads to improved academic performance.

Overall Development of Child

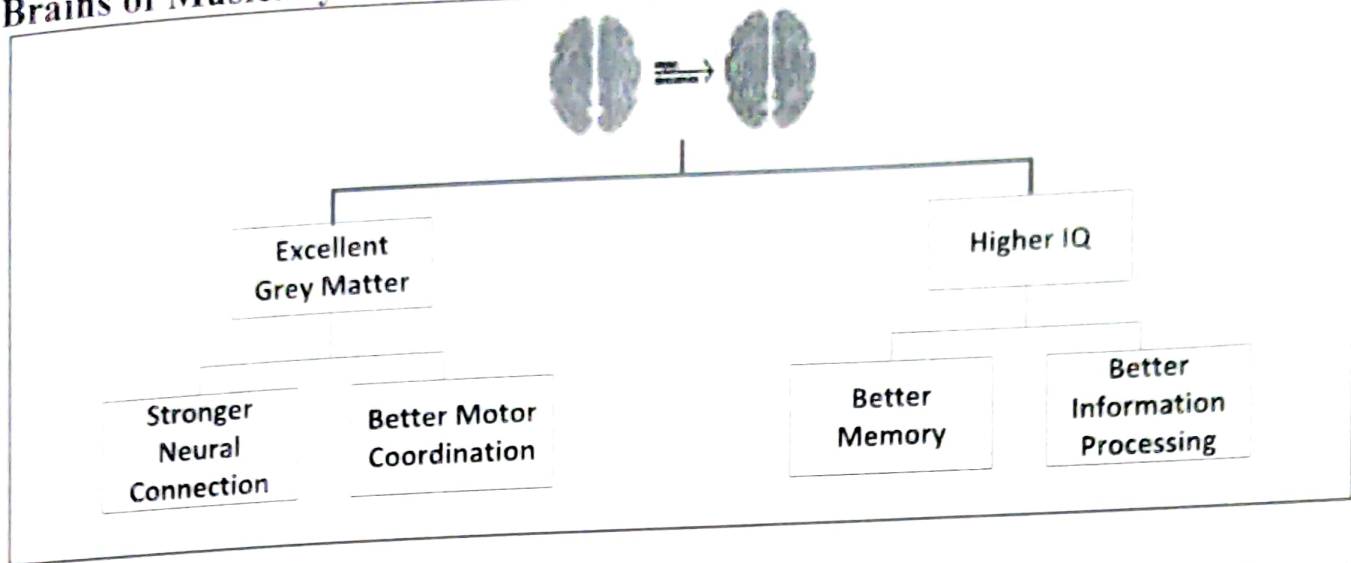
Many scientific studies have proved that music education is very important for attaining child's intellectual, mental and creative potential. Music education is also vital to improve socio-emotional skills and analytical development of children. Musically trained children can differentiate fine details of speech that leads to enhancing reading skills and interpreting the minute details. These musically trained students can unleash their creativity and infinite capabilities can be explored for personal and social growth.

- *Foster self-confidence:* Child participates in group activities

which provide an opportunity to make bonding with peer group and teachers.

- *Boosts persistence:* Playing the musical instruments with harmony is not an easy task, for the same child try to find out different ways to play that instrument.
- *Builds relationship and cooperation:* Children working together in groups to learn music tends to share the musical instruments and notes with their peer counterparts that develop a healthy relationship and inculcate the sense of companionship among children.
- *Enhances self confidence:* Playing any musical instrument or singing a tune feels like an achievement the children and make them more confident in their life.
- *Social exposure and experience:* Music education exposes you to different parts of society and cultures. Learning music with others and participating with them make them more social and responsible citizens of society.
- *Accelerating the development of speech and reading skills:* Musical notes, singing a tune enhance in speeding the skills.
- *Sense of empathy for others*
- *Music helps to attain focus of children for a longer period of time*

Brains of Musically Trained Individual

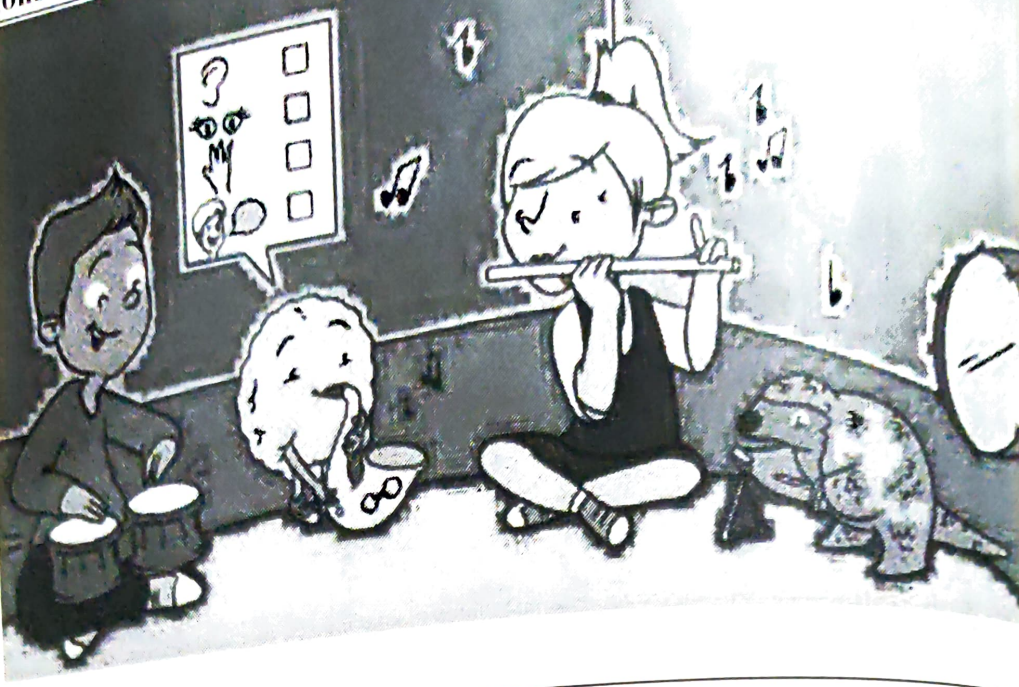


Cognitive Growth- A Scientific Proof

Neuro-scientists are revealing through their studies that there is a connection between musical study and cognitive growth. Scientific technologies like functional Magnetic Resonance Imaging (fMRI) and electroencephalography (EEG) has given the researchers a better insight of what's happening inside the brain when music is processed and this activity contributes in learning and functioning improvement. Research has given proof that playing a musical instrument leads to changes in child's brain which will help them to reach their full cognitive and academics potential. Children participating in musical activities like playing an instrument, listening or singing helps in stimulating the brain. This brain workout leads to improvement in the structure and functioning called neuroplasticity. Neuroplasticity is the brains ability to recognize itself by making new neural connections.

Advantages of Music Study- A Review

This is a very small overview of the recent finding of musical experience and brain. Many studies have been published in print or electronic media regarding music and mind. Hundreds of neuro-scientists are getting regular media attention for their involvement in research related to finding the effects of music on brain structure and functions. The music reaches to nearly all parts of human brain that makes music a perfect experimental instrument to find functions of brain. The relationship between academic and music study is historically mentioned in Ancient Greek. Many studies have published showing improved scores in exams (Vaughn & Winner)). Southgate & Roscigno showed the evidence of enhanced maths and reading test scores compared to other students. Catterall et.al. in their study concluded that students student participating in music had overall better test scores.



any studies published have linked music with improved academic and IQ levels. University of Toronto, Canada published a study in 2010 regarding the comparison of IQ performance of young students in music lessons with those taking drama lessons and no extra lessons in any field. The IQ was measured before and after the lessons. The results showed increased IQ scores of music students compared to other groups. IQ scores are broadly accepted as a standardized predictor of academic achievement. Recent research (Antonio et.al., 2019 and Gabrialla & Alaxender, 2020) has also shown that musically trained individuals have better remembering capabilities than others. Memory empowers us to recollect things even when our brain is busy with other aspects and is very important for crucial works like mental mathematics or reading comprehension. Many researchers currently working on focus

and music have extensively written about the importance of developing self discipline or focus in children to prepare them for many achievements in life. Lots of concentration and focus are required to sing or play a musical instrument. There are scientific evidences that children who took music classes found to have greater capabilities to focus and that helps them to enhance their cognitive abilities helping them to do better in other aspects of their life.

Speech and Reading Ability

Phonological ability is the capability of an individual to identify words, syllables and words begin and end which is required for reading, understanding and speaking a language and it uses the same areas of the brain to identify and break up sounds. These are very important skills that one gains through experience and they help one to acknowledge native language as a

the new languages a well. Research studies have shown that the individuals trained in music have better phonological skills that helps to find out words faster, much improved vocabulary and improvement in reading faster. Canadian Study in 2009 showed that children who are trained in music have better verbal intelligence scores after only four weeks of training. The benefits of music study are much better than other arts training. It is a well known fact that enhancement in speech and reading are very important to success at school.

Innovation

Moore et al., 2014 and other research gave evidence that there is a significant difference in communication between right and left hemisphere of the brain in the musically trained individuals versus others who are not musically trained. Neuroscientists involved in such type of research believe in greater connectivity between different hemisphere of brain regions can help to improve innovative and critical aspects.

Health and Resilience

Society is heartened to recognize that studying music brings health advantages to the children for life long. New research is emerging in music education and showing that long term music training improves cognitive functions as individual's age. There are researches proving that music therapy helped the people from hearth strokes and found to be useful in treating neurological abnormalities like Parkinson, autism, shuttering etc. Music education has shown to slow

down the onset of dementia- a chronic mental disorder. The strong relationship between music and speech as well as the innate enjoyment of music make music useful and all-round rehabilitative technique for all ages. Music study can second for the hearing loss in adult people. Studies have proved those senior musicals trained are ready to pick sounds from noisy places like markets, restaurants and can persevere discussions better than those people without musical training even after that those suffered deafness.

Music enhances Empathy and Social Awareness

Recent research has shown that music can make an increase in empathy in toddlers. Empathy comes from being sensitive to sudden changes within the individual voice that shows the emotions and mood. It is very important that children develop empathy to thrive in their family life, school or later at jobs. Verbal intelligence may be the reason behind the connection between empathy and music. Playing music boosts a child's ability to listen and pick up variation of speech. Music is inherently very emotional and musical memories are instinctive and realistic. Musicians learn to bond with society on an emotional level. Playing an instrument, singing or jam session with friends, students of music of any age group learn to share attention, collaborate or co-operate among themselves. Research has shown that collaborative music increases toddlers' social behavior that makes them more likely to help the needy in society.

Qualitative Music Education Impact

In the article it has shown that the quality of music education is positively related to academic achievement. There are researches that showed that elementary school students with quality music education outperformed the lower quality programs in standardized test of mathematics and English. Neuroscientists believe that music education may not be responsible for improvement in test scores but changes in brain activities due to musical training can lead to numerous improvements in cognitive skills like attention, memory and ability to read, all of which tells us the future of academic outcomes.

Conclusion

It is now proven fact that an individual engaged in musical study whether recreational music or professionally trained musicians from childhood to

References

1. Garner, A. (2019). *A Literature review of the benefits of music education: Beyond scope of academics*. 10.13140/RG.2.2.18183.21921
2. Bava S., Thayer R., Jacobus J., Ward M., Jernigan T. L., Tapert S. F. (2010). Longitudinal characterization of white matter maturation during adolescence. *Brain Res.* 1327, 38–46
3. Bavelier D., Green C. S., Dye M. W. G. (2010). Children, wired: for better and for worse. *Neuron* 67, 692–701
4. Ben-Pazi H., Gross-Tsur V., Bergman H., Shalev R. S. (2003). Abnormal rhythmic motor response in children with attention-deficit-hyperactivity disorder. *Dev. Med. Child Neurol.* 45, 743–745
5. Bialystok E., Depape A. M. (2009). Musical expertise, bilingualism, and executive functioning. *J. Exp. Psychol. Hum. Percept. Perform.* 35, 565–574
6. Canolty R. T., Knight R. T. (2010). The functional role of cross-frequency coupling. *Trends Cogn. Sci.* 14, 506–515
7. Cason N., Schon D. (2012). Rhythmic priming enhances the phonological processing of speech. *Neuropsychologia* 50, 2652–2658
8. Chandrasekaran B., Kraus N. (2010). Music, noise-exclusion, and learning.

retirement years are improving their cognitive skills and helps to develop social connections. In last two decades numerous studies found that musically trained individuals outperform academically compared to other students by huge margins. The musically trained students are more engaged and motivated in their academics and are more likely to strive more in academics. We must thank the neuroscientists for ground breaking research, which gave the scientific explanation for this phenomenon. Music study leads to tremendous changes in child's brain by enhancing their capabilities to do work that require sustained attention and careful reading and listening. Parents who are investing in musical study can be more confident to get lifelong advantages for their children.

- Music Perce
9. Criscuolo, A. Intelligence <https://doi.org/>
 10. Diamond A. developme
 11. Erickson K. plasticity, a
 12. Fell J., Axm processes. N
 13. Gander P. E. attention m auditory co
 14. Gerry D., U enhance mu 407
 15. Goswami U and links to
 16. Haimson J. average mu
 17. Hove M. J. increases a
 18. Howland J. and memor
 19. Huss M., rhythm, ri musical me
 20. Hyde K. L. (2009). Th of musical N.Y. Acad
 21. Irvine S. H. Sci. 21, 41
 22. Jakobson musicians'
 23. Kenny D. from your
 24. Keshavan D. R., et adolescenc 3205(02)

Music Percept. 27, 297–306

9. Criscuolo, A. et.al. (2019). On the Association Between Musical Training, Intelligence and Executive Functions in Adulthood. *Front. Psychol.* <https://doi.org/10.3389/fpsyg.2019.01704>
10. Diamond A., Lee K. (2011). Interventions shown to aid executive function development in children 4 to 12 years old. *Science* 333, 959–964
11. Erickson K. I., Weinstein A. M., Lopez O. L. (2012). Physical activity, brain plasticity, and Alzheimer's disease. *Arch. Med. Res.* 43, 615–621
12. Fell J., Axmacher N. (2011). The role of phase synchronization in memory processes. *Nat. Rev. Neurosci.* 12, 105–118
13. Gander P. E., Bosnyak D. J., Roberts L. E. (2010). Acoustic experience but not attention modifies neural population phase expressed in human primary auditory cortex. *Hear. Res.* 269, 81–94
14. Gerry D., Unrau A., Trainor L. J. (2012). Active music classes in infancy enhance musical, communicative and social development. *Dev. Sci.* 15, 398–407
15. Goswami U. (2012). Entraining the brain: applications to language research and links to musical entrainment. *Empir. Musicol. Rev.* 7, 57–63
16. Haimson J., Swain D., Winner E. (2011). Do mathematicians have above average musical skill? *Music Percept.* 29, 203–213
17. Hove M. J., Risen J. L. (2009). It's all in the timing: interpersonal synchrony increases affiliation. *Soc. Cogn.* 27, 949–960
18. Howland J. G., Wang Y. T. (2008). Chapter 8 Synaptic plasticity in learning and memory: stress effects in the hippocampus. *Prog. Brain Res.* 169, 145–158
19. Huss M., Verney J. P., Fosker T., Mead N., Goswami U. (2011). Music, rhythm, rise time perception and developmental dyslexia: perception of musical meter predicts reading and phonology. *Cortex* 47, 674–689
20. Hyde K. L., Lerch J., Norton A., Forgeard M., Winner E., Evans A. C., et al. (2009). The neurosciences and music III: disorders and plasticity: the effects of musical training on structural brain development a longitudinal study. *Ann. N.Y. Acad. Sci.* 1169, 182–186
21. Irvine S. H. (1998). Innate talents: a psychological tautology? *Behav. Brain Sci.* 21, 419–419
22. Jakobson L. S., Cuddy L. L., Kilgour A. R. (2003). Time tagging: a key to musicians' superior memory. *Music Percept.* 20, 307–313
23. Kenny D. T., Osborne M. S. (2006). Music performance anxiety: new insights from young musicians. *Adv. Cogn. Psychol.* 2, 103–112
24. Keshavan M. S., Diwadkar V. A., DeBellis M., Dick E., Kotwal R., Rosenberg D. R., et al. (2002). Development of the corpus callosum in childhood, adolescence and early adulthood. *Life Sci.* 70, 1909–1922 [10.1016/S0024-3205\(02\)01492-3](https://pubmed.ncbi.nlm.nih.gov/12111111/) [PubMed] [CrossRef] [Google Scholar]