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The Impact of Music on Sports Activities: A Scoping Review

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A B S T R A C T

Generally, the music performances on sports activities are manifested and realized through the four mechanisms of reducing the feeling of tiredness, increasing excitement levels, creating harmony, and finally increasing calmness and the sense of comfort. This function becomes very important when considering that the music impact acts as a miracle doping in professional sports. Besides, the lack of enjoyment in sports activities is often mentioned as an obstacle to participation in sports activities. This article discussed, evaluated, and analyzed the research records in three main topics: 1. The benefits of music in sports activities, 2. The conceptual model for showing the different music impact in sports activities, and 3. The underlying mechanisms of music impact on sports. A scoping review of literature in sport and music field was conducted to fulfill the research objectives. Finally, the inference was made by proposing theories such as corresponding and induction of microscopic and macroscopic order along with another direct and secondary music impact. Researches have not been able to uncover all aspects of music magic secrets yet. So, this challenge remains for researchers and athletes on how to maximize the benefits of using music during sport and exercise by focusing on practical applied approaches.

Introduction

Music expresses feeling and thought without words and is also ahead of speech and beyond all words (Ingersoll, 2009). Music is an essential aspect of human culture and evolution that probably existed even before verbal communication (Mithen, 2011; Patel, 2010). It can be said that music is a part of human nature, a subject that almost all people with different ages and cultures, from the most primitive to the most advanced societies, have used for thousands of years. Due to the two characteristics of antiquity and presence, music is uncommonly prevalent everywhere and among all human activities (Levitin, 2006). Music is essential for ceremonies, openings, weddings, wars, the

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Olympics, mourning and burial ceremonies. Using music during daily life causes emotional moments, increases mood and enjoyment of daily activities, including sports activities (Juslin & Laukka, 2004).

The drastic rise in obesity, physical inactivity, and cardiovascular disease is a growing concern for governments and healthcare providers in many countries (Radford et al., 2018). Lack of sports activities is one of the main risk factors for non-communicable diseases, as the main cause of death worldwide. Lack of enjoyment of sports activities is often mentioned as an obstacle to participation in sports activities (Burgess, Hassmén, & Pumpa, 2017). Messages that highlight rational reasons for participating in sports should be complemented by emphasizing pleasant and delightful experiences (Brand & Ekkekakis, 2018).

Enjoying the advantages of sports activities is entirely conditional on regular and frequent participation, and that's why the psychological components that underlie commitment to exercise are in the spotlight (Ekkekakis, Hartman, & Ladwig, 2020). So, a positive and enjoyable emotional experience during sports activity and especially in its final moments can encourage and strengthen future participation through the proposed mechanism of emotional memory (Fredrickson & Joiner, 2002). The severity of exercise is also thought to be a key and influential determining factor in a person's emotional experience towards sports activities. Ekkekakis (2003) has expressed the impact of sports activity severity on three levels on the emotional experience of individuals as follows: Moderate physical activity (which is less than the breathing threshold, that is, the intensity at which breathing is difficult and particularly pleasurable), heavy physical activity (which is close to the breathing threshold and may be considered pleasant or not depending on the performer's interpretation), severe physical activity (beyond the breathing threshold is almost universally considered an unpleasant activity)(Ekkekakis, 2003). Regarding the necessity to increase positive emotional states during exercise, music is considered a tool to increase commitment to sports activities, even at higher intensities (Clark, Baker, & Taylor, 2016; Hutchinson et al., 2018). This article discussed, evaluated, and analyzed the research records in three main topics: 1. The benefits of music in sports activities, 2. The conceptual model for showing the different music impact in sports activities, and 3. The underlying mechanisms of music impact on sports. Finally, the inference was made by proposing theories such as corresponding and induction of microscopic and macroscopic order along with another direct and secondary music impact.

The music advantages in sports activities

The first research on music advantages in sports activities dates back to Ayres (1911) that showed music impact on increasing the speed of six-day cycling. Since then, music relation with the improvement of physical performance has been studied and proven in a wide range of sports activities (C. Karageorghis et al., 2020). The impacts of music in sports include psychological, psycho-physical, physiological, and entrepreneurial impacts. Psychological impacts focus on how music affects mood, emotions, feelings (feelings of satisfaction or dissatisfaction), cognition (thought processes), and behavior (Clark et al., 2016; C. I. Karageorghis & Jones, 2014).The psycho-physical impacts of music are often studied by psychiatrists, who are generally interested in knowing how the brain interacts with the body world. Sometimes the most common impact during exercise is the perception of physical pressure (C. I. Karageorghis, 2016), and the scale of this pressure perception is used to measure emotions. Sport physiology refers to the study of reactions and adaptations during multiple sports activities, and physiologists in this field mostly study the effective ways of music on the time of sports activities and effective oxygen consumption. Besides, music has an entrepreneurial effect that improves athletes' sports performance by delaying fatigue or increasing work capacity.

Many studies consider a combination of these impacts because music affects individuals at different levels (Loizou & Karageorghis, 2015). Cheerful music affects a person's mood, increases heart rate, and speeds up steps. Therefore, researchers often want to combine criteria that examine how people feel, how their cardiovascular system responds to music, and how they perform in sports. The neuroscience approach focuses on stimulating parts of the brain with music, and one of the important tools of this method is functional magnetic resonance imaging. Bishop, Wright, and

Karageorghis (2014) indicated that listening to motivational music (fast and loud) stimulates parts of the primary auditory membrane and cerebellum. Since these parts are responsible for processing emotions, managing movement or movement patterns control, their mutual stimulation with music can be one of the main reasons for their effectiveness in athletes' performance. Learning music increases physical coordination and the acquisition of mobility skills. Moreover, listening to rock music aloud increases cerebellum activity and improves the level of champions' excitement at important sporting events that require a lot of energy (such as Olympic weightlifting)(C. I. Karageorghis & Jones, 2014).

In the world of sports, athletes may use music to relax, excite, or create a pre-competition mindset (C. I. Karageorghis, Bigliassi, Tayara, Priest, & Bird, 2018; Laukka & Quick, 2013), so many studies have focused on music usage before, during, and after exercise. Music can be used before activity as a stimulus (M Eliakim, Meckel, Nemet, & Eliakim, 2007) or as a relaxer (C. I. Karageorghis, Bigliassi, et al., 2018). Researchers showed that motivational music increases excitement, motivational imagery and has a positive effect on self-talk and mental performance (Bishop, Karageorghis, & Loizou, 2007; Bishop, Wright, & Karageorghis, 2014; Pain, Harwood, & Anderson, 2011). Mental performance is a desirable state of mind in which a person is attracted to ongoing activity and does it automatically. Pre-activity music is used to manipulate emotional states to influence performance so that emotions from music affect the timing of secondary selective reactions in athletes' performance (Bishop, Karageorghis, & Kinrade, 2009). Slow-rhythm music decreases excitement, while fast-rhythm music increases it (Yamamoto et al., 2003). Music boosts the heartbeat immediately before activity, indicating a rise in physiological excitement (M Eliakim et al., 2007).

Music can evoke positive emotional states during physical activity ((Hutchinson et al., 2018) and distract participants or athletes from unpleasant feelings of physical exertion and fatigue (Hutchinson & Karageorghis, 2013). These benefits may contribute to the identified ergogenic effects, including increased power and power output (Hutchinson et al., 2011; C. I. Karageorghis, Cheek, Simpson, & Bigliassi, 2018), increased tolerance (Atkinson, Wilson, & Eubank, 2004; Terry, Karageorghis, Curran, Martin, & Parsons-Smith, 2020), and increasing work efficiency (Edworthy & Waring, 2006; Lee & Kimmerly, 2016) in experimental studies. Ergogenic impacts have been reported when participants coordinate their movements with music (C. I. Karageorghis et al., 2009; C. I. Karageorghis et al., 2010; Terry et al., 2020) and also in the absence of coordination (Hutchinson et al., 2018; Stork, Kwan, Gibala, & Martin Ginis, 2015). People show a strong tendency to respond to the rhythmic features of music, and this tendency sometimes leads to synchronization between a musical beat and a person's movements. When this movement takes place at a specific time and consciously with music, it is said that the music is rhythmic. Besides, a fixed rhythmic pattern of music increases the regularity of the movements (Bood, Nijssen, Van Der Kamp, & Roerdink, 2013). So, simultaneous use of music while saving energy increases movement efficiency by improving coordination (C. I. Karageorghis et al., 2013).

Studies that use low- to moderate-intensity endurance tasks have shown significant advances in endurance with music (Lane, Davis, & Devonport, 2011; Yamashita, Iwai, Akimoto, Sugawara, & Kono, 2006). It is clear that music reduces stress and evokes more positive emotional states (Hutchinson & Karageorghis, 2013). Findings on pressure perception generally confirm this prediction that the harder we work, the more physiological feedback will overwhelm our attention and absorb the sensory inputs provided by music (Hutchinson & Karageorghis, 2013; Jones, Karageorghis, & Ekkekakis, 2014). Since effort intensity is often expressed as a percentage of maximal oxygen uptake, it seems that music reduces perceived pressure by up to 75% of maximal oxygen consumption, but above that intensity, these effects disappear quickly (Hutchinson & Karageorghis, 2013).

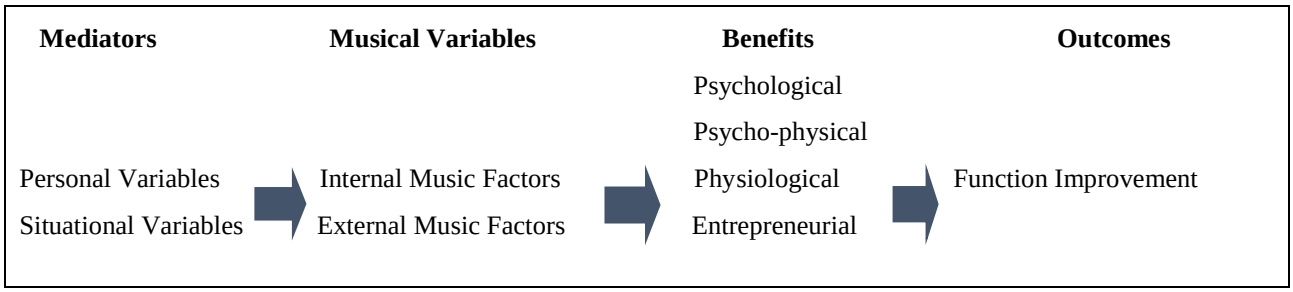
Music impact after exercise also has an influential and contributive role in improving the injury caused by competition, exercise, or training (C. I. Karageorghis, Bruce, et al., 2018). Music leads to faster excretion of lactic acid after running to the point of fatigue on the treadmill that is associated with reducing perceived pressure (Michal Eliakim, Bodner, Meckel, Nemet, & Eliakim, 2013; Michal

Eliakim, Meckel, Gotlieb, Nemet, & Eliakim, 2012). Using music to return to the initial state, active (with motion) and inactive (static) after exercise causes a faster decrease in heart rate, blood pressure, and perceived pressure (C. I. Karageorghis, Bruce, et al., 2018; Savitha, Mallikarjuna, & Rao, 2010).

Conceptual model to show the different music impacts in the field of sports activities

A conceptual model (Figure 1) has been used in the present study to explain and summarize the concepts. This model accurately represents musical variables, mediators, benefits, and outcomes of linking music to sports activity.

Figure 1. Model for displaying musical variables, mediators, benefits, and results in linking music to sports activities (Terry et al., 2020)



The hypothesized benefits of music are divided into four categories: psychological responses, psychophysical responses, physiological responses, and entrepreneurial responses that ultimately lead to increased physical function (speed, strength, and endurance) in exercise. For example, using appropriate music leads to greater positive impact and greater productivity (Elliott, Carr, & Savage, 2004; C. I. Karageorghis et al., 2009; C. I. Karageorghis et al., 2010). Music's special impacts in sports activities depend on a wide range of musical, personal, and situational variables.

In this model, musical variables are divided into two parts: internal factors and external factors. Internal musical factors are about music sounds, including dynamics, rhythm, melody, harmony, song arrangement, and the rhythm of poetry reading. For example, negative and low-energy poems may neutralize the motivational effects of music (Sanchez, Moss, Twist, & Karageorghis, 2014). External music factors are about the meaning of music from the perspective of individuals, including music style, poetry meaning and concept, the way of music listeners' interpretation, and music cultural connections. In terms of internal factors, the rhythmic properties of music are highly effective in exercise or practice. Internal factors are more important than external factors in determining the response to music (Hutchinson & Karageorghis, 2013; Waterhouse, Hudson, & Edwards, 2010).

Personal and situational variables are mediators that affect the power of communication between a piece of music and the individual's response (Hutchinson & Karageorghis, 2013). These variables are age and gender (Clark, Taylor, & Baker, 2012; C. I. Karageorghis et al., 2010), level of familiarity with music, priority of music genre, music speed (C. I. Karageorghis & Terry, 2011; Van Dyck, 2019), intensity Sports activity (Hutchinson & Karageorghis, 2013), participants' practice conditions (Carlier, Delevoye-Turrell, & consortium, 2017) and the specific nature of sports activity (C. I. Karageorghis, Bigliassi, et al., 2018). For example, the rhythm and speed of music lead to different responses according to age, individual characteristics of athletes, and the specific nature of sports activity (Clark et al., 2012, ; DEUTSCH & HETLAND, 2012). People over 50 years old generally prefer slower music for exercise compared to younger people (Priest, Karageorghis, & Sharp, 2004). Besides, in terms of personality impact on music choice (an individual factor), the majority of extroverts generally prefer motivational music compared to introverts (McCown, Keiser, Mulhearn, & Williamson, 1997) and the characteristics of such music are high speed and rhythm and high bass sound. The quality of music melody and harmony, depending on the cultural context and musical training, leads to different responses in the listeners. For example, Westerners usually associate melody and high harmony with their positive and happy feelings. Whereas, in many Eastern cultures

(for example, Arabic and Persian), melodies and minor harmonies elicit similar reactions due to cultural differences in the composition of the music (Levitin, 2006). Individual factors of gender and age modulate the reaction to music during exercise or exercise (Crust, 2008). For instance, women pay more attention to music's rhythmic quality and movements than men, and men to the cultural bond of music more than their female counterparts (C. I. Karageorghis, Terry, & Lane, 1999). On the other hand, young people pay more attention to music than their older counterparts and prefer newer and faster songs (Priest et al., 2004). Thus, people in all age groups consider music diversity an important factor (Priest et al., 2004).

According to this model, the impact of musical factors on personal responses and adjustment by individual and situational factors is one of the important things that should be considered for professional athletes when choosing music. Based on this model, the music selected for the sports activity should be in harmony with the individual characteristics of the participants, the type of activity, the training environment, and the intended results. The possibility of re-selecting music pieces that lead to positive results (and vice versa) increases, and the selection of similar pieces (for example, works done by the same artist or similar in speed or rhythmic feel) increases. On the other hand, the negative result of music may, on the contrary, result in canceling the selection of a particular song or similar songs. There is a clear connection between the internal factors of music and responses. For example, time factors in music such as the speed and rhythm of a poem can profoundly affect excitement. Briefly, aspects such as melody and harmony are very important in connection with the emotional response (Juslin & Laukka, 2004; Van der Zwaag, Westerink, & Van den Broek, 2011).

Underlying mechanisms of music impacts on sports

Some studies have investigated the underlying mechanisms of music impact on sport in recent decades (Grahn & Brett, 2007). The present study discussed the literature review in four noticeable mechanisms: impact on physiology, emotion, distraction, and movement coordination with musical rhythms. Music can have a direct impact on improving human physiology, such as boosting heartbeat, breathing, blood pressure, endorphin levels, skin reactions, brain waves, motion reactions, flexibility, and movement coordination, the limbic nervous system, and the control center of the autonomic nervous system, and reducing physical pain (Shum, Taylor, Thayala, & Chan, 2014). Entering a gym, cheerful music with high-theme pieces, such as 160 beats, can significantly increase an athlete's breathing rate and raise their heartbeat by an average. Likewise, listening to a quiet classical piece after a hard workout leads to a decrease in the heartbeat due to the autonomic nervous system that helps the body movement in activities and regulates major processes such as digestion and breathing. It also affects the speed of heart and lung activity (Barzegar, 2013).

According to researchers' statement, trends in biological rhythms such as heartbeat in changing the repetition against the music beat are introduced attraction. Researchers define trends in biological rhythms such as heartbeat in changing the repetition against the music rhythm as attraction. Other body beats, such as breathing rate and brain waves, are also attracted to music; in fact, attraction can be considered a rhythmic manifestation of resonance (Leeds, 2010). Athletes' most common music usage is controlling psycho-motional excitement, regulating or modulating emotional states, and creating specific emotions (such as happiness, cheerfulness, calmness, or aggression). For instance, loud and fast-rhythm music automatically stimulates the listener by activating the central nervous system, regardless of how the music is evaluated (Van Dyck, 2019). This stimulation leads to boosting heartbeat, blood pressure, body temperature, skin reactions, and muscle tension (Chapados & Levitin, 2008). Slow-rhythm music has the opposite impact and reduces empathetic excitement. During sports activities, music affects people feeling or the intensity of workouts, even when they exercise voluntarily despite their fatigue (Hutchinson & Karageorghis, 2013). Scherer and Zentner (2001) have defined three ways to enhance emotions through music: memory, empathy, and valuation. Memory refers to the music impact on recalling an emotional event; empathy is related to the listener's ability to recognize the emotions expressed by the singer, and valuation refers to the time listeners evaluate the personal importance of emotions in music according to their pleasantness(Scherer & Zentner, 2001).

One of the results of reducing pain and stress accompanied by music is distraction. Music stimulates people to turn their attention to the environment and sound, thus moving away from the inner attention related to exhaustion. Indeed, out-of-body distraction focuses on unrelated details to activity (such as surrounding environment, talking, and everyday thoughts). In contrast, in-body attention focuses on activity-related details (e.g., breathing rate, pace, procedure). The afferent nervous system has limited channel capacity, and therefore sensory stimuli such as music inhibit internal fatigue factors related to physical activity (Rejeski, 1985). Bigliassi et al. (2016) have shown in their research that music effectively reduces theta waves (4-7 Hz) in the frontal, central, parietal, and posterior regions of the brain. This process is directly related to suppressing fatigue-related symptoms (Craig, Tran, Wijesuriya, & Nguyen, 2012). The increased ratio of serotonin to dopamine in the brain has been identified as a major cause of fatigue. Consequently, we should consider some of the works of music effective in reducing the secretion of serotonin in the brain (Boutcher & Trenske, 1990). It is important to note that when the power of physiological feedback signals overshadows the attention processes, the music ability to prevent such symptoms in strenuous physical activity is greatly reduced (Ekkekakis, 2003). The music contribution in changing distractions to attention during intense exercise is about 10% (C. I. Karageorghis & Jones, 2014). However, this pattern is more evident in low- to moderate-intensity exercise activities. It seems that in high-intensity activities, an automatic shift of attention from discontinuity to continuity occurs. In other words, people are forced into inner attention that acts as an internal immune system, ensuring that they do not expose themselves to damage to vital muscles and organs.

The concept of rhythm response is directly related to attraction. The term refers to the innate human tendency to harmonize movement with musical rhythms. The afferent nervous system transmits messages from the muscles and sensory organs to the brain, while the efferent neurons transmit messages to the muscles to move. The idea behind the beats is that the brain is responsible for coordinating the messages of the afferents. The pacemaker also enables us to execute repetitive movement patterns (e.g., running) whose only initial command requires special attention (Clynes & Walker, 1982). Music also stimulates the parts of the brain that cause excitement, resulting in a bodily response in the listener (Lyttle & Montagne, 1992). The use of brainwave scanners has shown that when people listen to music rhythms, the cerebellum and the motional parts of the cerebral cortex are activated (Koelsch & Skouras, 2014). The process of synchronizing movement with music often referred to as motional-auditory synchronization, is a kind of rhythmic continuity. In the music function, this connection was one-sided until recently because the athlete could follow the rhythm of the music, although the rhythm did not change with his movement speed. Now the athlete can use accelerometers and digital intermediaries to facilitate cross-synchronization (Moens et al., 2014). Although coordinating movements with the rhythm of music is useful and enjoyable, the physiological benefits may also increase. Research has shown that jogging or fixed cycling in parallel with music reduces the cost of metabolism and increases performance (Bacon, Myers, & Karageorghis, 2012; Terry et al., 2020). Creating a movement that simultaneously accompanies a regular and distinctive beat of a piece of music seems to enhance emotions and make activity enjoyable with the rhythm of the music (Juslin & Laukka, 2004).

Methodology

A scoping review of literature in sport and music field was conducted to fulfill the research objectives. Several databases include PubMed, Embase, Elsevier, Science Direct, Google Scholar, were examined to find English and non-English language articles on the music impact on sports activities. Besides, Jahad University Scientific Database (SID) was reviewed from the beginning of these bases until October 2021 to find articles published in the country's research journals. Articles references were also examined to ensure the reliability of the data. In this search, the terms 'the music impact on sports, sports synchronous with music, asynchronous of sports with music, pre-workout music, post-workout music, musical, personal and situational variables affect sports activity' were used. Finally, 41 articles included in the research analysis. After reviewing the literature according to the research

objectives, the impacts of music on sport activities were classified under different categories presented in **table 1.**

Results

Regarding the titles and abstracts of the articles, the search results were examined, leading to identifying 41 articles in the field under study. Table 1 provides general characteristics of articles related to the music impact on sports activities, including research topic, researchers' names, and year of implementation.

Table 1. Studies on the music impact on sports activities until October 2021

Research topic	Researchers' Name and Year of Implementation
Music psychological impacts on sports activities	(Ekkekakis et al., 2020) (Hutchinson et al., 2018) (Clark et al., 2016) (C. I. Karageorghis & Jones, 2014) (Hutchinson et al., 2011) (Bishop et al., 2007) (Scherer & Zentner, 2001)
Music psycho-physical impacts on sports activities	(Van Dyck, 2019) (Bigliassi, Karageorghis, Nowicky, Orgs, & Wright, 2016) (Koelsch & Skouras, 2014)
Music physiological impacts on sports activities	(C. Karageorghis et al., 2020) (Shum et al., 2014) (Barzegar, 2013) (Chapados & Levitin, 2008)
Music entrepreneurial impacts on sports activities	(C. I. Karageorghis, Bigliassi, et al., 2018) (Lee & Kimmerly, 2016) (Terry et al., 2020) (Hutchinson et al., 2011) (Edworthy & Waring, 2006) (Atkinson et al., 2004)
Music timing function in sports activities (Before, during and after exercise)	(C. I. Karageorghis, Bigliassi, et al., 2018) (C. I. Karageorghis, Bruce, et al., 2018) (Bishop et al., 2014) (Pain et al., 2011) (M Eliakim et al., 2007)
Coordinating function of sports movement with music rhythms	(Stork et al., 2015) (Moens et al., 2014) (Bood et al., 2013)

	(Bacon et al., 2012) (Juslin & Laukka, 2004)
Effective music variables in sports activities (Internal and external music factors)	(Sanchez et al., 2014) (Hutchinson & Karageorghis, 2013) (Waterhouse et al., 2010)
Personal and situational variables	(Carlier et al., 2017) (Van Dyck et al., 2015) (DEUTSCH & HETLAND, 2012) (Clark et al., 2012) (Crust, 2008) (Levitin, 2006) (Priest et al., 2004)

The present study indicated that most of the studies on the music impact on sports activities are dedicated to four categories of psychological, psycho physical, physiological, and entrepreneurial impacts of music in sports, that ultimately lead to increased physical performance (speed, strength, and endurance) in sports (51% of studies). It is worth noting that 12% of previous research has examined the Music timing function in sports activities and has shown the psychological, psycho-physical, physiological, and entrepreneurial benefits of music before exercise, during, and after exercise. As shown in Table 1, coordinating function of sports movement with musical rhythms includes 12% of the research that discusses the four categories of musical impacts when participants coordinated their movements with music and lacked coordination with the music. The special music impact in sports activities depends on various musical, personal, and situational variables. Musical variables are divided into internal and external factors that include 8% of the research in this study. Personal and situational variables that affect the power of communication between a piece of music and a person's response include about 17% of the research in this study. A summary of these researches is provided in the previous sections.

Discussion and Conclusion

Using music in sports is somewhat similar to doping. In this regard, Karageorghis and Terry (2011) state that listening to appropriate music can increase an athlete's performance by up to 15%. For this reason, they equate the music impact with a legal drug, of course, to increase performance. Regarding the significance of music, many sports experts oppose using music in the Olympics because they believe it creates a double and unusual unknown, non-muscular origin force(C. I. Karageorghis & Terry, 2011).

Sports activity causes shifts in the number of hormones in the body (Rocheleau, Webster, Bryan, & Frazier, 2004). One of these impacts is releasing hormone endorphins (Leuenberger, 2006), which is similar in the case of music. Thus, dynamic music performance (such as singing, dancing, and playing an instrument) releases endorphins, but not just listening to music and low energy music activities (Dunbar, Kaskatis, MacDonald, & Barra, 2012).

In group sports, following the chronological order of music, it is possible to create harmony and coherence in the same behavior of each athlete. In professional sports, to endure the conditions, reduce the suffering and inflammation caused by hard training and competitions, and direct the mind, motivate, and inspire hope, we can see significant results and many positive impacts of using vocal music during sports activities. Obviously, for the best sports efficiency, the most interaction should be established between the body organs (organic order). Music is the only factor that, through sharing

time during exercise, leads to the best use of time element based on athletes' adaptation and coordination with it. Besides, creating this adaptation help athletes reach a higher level of fitness and performance. So, music subconsciously teaches the athlete order and timing.

Music induces two kinds of order: first, macroscopic and tangible temporal order when rhythm and beat are its main elements. Second, the microscopic order in music sounds that results from the regular vibrations of sound sources (musical instruments). Since music basically contains and results from sounds with regular vibrations, the impact, and spread of such an order on the athlete's body will have an adaptive performance. The regular sound aspect of music is always trying to regulate what it encounters; that is one of the secondary impacts of music to inspire order. The music can stay in the athlete's mind in such a way that he can whisper its melody or lyrics. Floating music timing can give the athletes the freedom to recreate that music in their minds with any rhythm that suits their circumstances and activities. The floating music timing can give the athlete the freedom to recreate that music in his mind with any rhythm that suits his circumstances and activities, renew that music in his imagination, or read the poem even faster or slower. This feature can adapt and generalize the use of music in all sports activities.

As mentioned earlier, the music impact on sports activities is manifested through four mechanisms: reducing fatigue, increasing arousal levels, creating coordination, and finally increasing relaxation and comfort that ultimately improves performance. So, everyone can make the most of this efficient, effective, cheap and enjoyable way. Using music to involve in sports activities, even activities in which there is no previous experience completes the influence of music on sports activities. However, it seems that research has not been able to reveal all aspects of the magic secrets of music. So, the challenge remains for researchers and athletes on how to benefit from using music while exercising by emphasizing practical methods.

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