Individualization of music-based rhythmic auditory cueing in Parkinson’s disease

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Gait dysfunctions in Parkinson's disease can be partly relieved by rhythmic auditory cueing. This consists in asking patients to walk with a rhythmic auditory stimulus such as a metronome or music. The effect on gait is visible immediately in terms of increased speed and stride length. Moreover, training programs based on rhythmic cueing can have long-term benefits. The effect of rhythmic cueing, however, varies from one patient to the other. Patients' response to the stimulation may depend on rhythmic abilities, often deteriorating with the disease. Relatively spared abilities to track the beat favor a positive response to rhythmic cueing. On the other hand, most patients with poor rhythmic abilities either do not respond to the cues or experience gait worsening when walking with cues. An individualized approach to rhythmic auditory cueing with music is proposed to cope with this variability in patients' response. This approach calls for using assistive mobile technologies capable of delivering cues that adapt in real time to patients' gait kinematics, thus affording step synchronization to the beat. Individualized rhythmic cueing can provide a safe and cost-effective alternative to standard cueing that patients may want to use in their everyday lives.

I problemi della marcia nelle persone affette da Parkinson potrebbero essere parzialmente alleviati da un segnale acustico ritmico. Questo consiste nel chiedere ai pazienti di camminare seguendo uno stimolo ritmico udito, come un metronomo o una musica. L'effetto sulla marcia è visibile immediatamente, in termini di incremento della velocità e lunghezza del passo. Inoltre, i programmi di allenamento basati sui segnali ritmici possono avere benefici a lungo termine. L'effetto dei segnali ritmici, tuttavia, varia da un paziente all'altro. La risposta alla stimolazione potrebbe dipendere dalle abilità ritmiche, che spesso si deteriorano con la malattia. Le capacità residue nel tenere il ritmo favoriscono una risposta positiva al segnale ritmico. D'altra parte, la maggior parte dei pazienti con
scarse abilità ritmiche non risponde ai segnali o sperimenta un peggioramento della marcia quando cammina seguendo i segnali ritmici. È stato proposto un approccio individuale all’utilizzo dei segnali uditi ritmici, con la musica per compensare questa variabilità nella risposta dei pazienti. Questo approccio richiede l’utilizzo di tecnologie di assistenza su dispositivo mobile capaci di fornire segnali che si adattino in tempo reale alla cinematica della marcia dei pazienti, permettendo quindi la sincronizzazione del passo con il ritmo. I segnali ritmici individuali possono fornire un’alternativa sicura ed economica ai segnali standard che i pazienti possono usare nella vita di tutti i giorni.

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Findings from a prospective randomized controlled trial of an individualized music listening program for persons with dementia

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Music & Memory (M&M) is a passive music intervention that uses personalized music playlists delivered on digital music players. This program has been increasingly adopted in nursing homes across the United States to facilitate communication, engagement, and socialization among persons with dementia (PWDs); however, few studies have evaluated the program’s effect on PWDs’ outcomes. In the present study, a randomized controlled crossover design was used to examine the impact of the M&M program on 59 PWDs in 10 nursing homes over a 14-week period. Residents’ evaluated outcomes included agitation, behavioral symptoms, and use of psychotropic medications. Although trends supported the positive effects of M&M, no statistically significant differences were found in any of the outcomes measured over time. Methodological limitations withstanding, these findings call into question the effectiveness of the M&M program and the ability of facility staff to implement this intervention with fidelity.

Musica e Memoria (M&M) è una tipologia di intervento musicale passivo che utilizza scalette di brani personalizzate distribuite su lettori di musica digitali. Questo programma è stato sempre più adottato nelle case di cura degli Stati Uniti per facilitare la comunicazione, il coinvolgimento e la socializzazione tra individui affetti da demenza (PWD); tuttavia, sono pochi gli studi che hanno valutato l’effetto di tale programma sui risultati specifici in questa popolazione di pazienti. Nella presente ricerca è stato utilizzato un disegno di studio randomizzato controllato incrociato per esaminare l’impatto del programma M&M su 59 pazienti affetti da PWD in 10 case di cura per un periodo di 14 settimane. Gli esiti valutati hanno incluso il grado di agitazione, sintomi comportamentali e l’uso di farmaci psicotropi. Sebbene diverse tendenze supportino gli effetti positivi di tale programma, non sono state trovate differenze statisticamente significative in nessuno degli esiti misurati nel tempo. Nonostante le limitazioni metodologiche, questi risultati mettono in discussione l’efficacia del programma M&M e la capacità del personale delle strutture di applicare fedelmente tale metodo.

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Different types of sounds and their relationship with the electrocardiographic signals and the cardiovascular system

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For some time now, the effects of sound, noise, and music on the human body have been studied. However, despite research done through time, it is still not completely clear what influence, interaction, and effects sounds have on human body. That is why it is necessary to conduct new research on this topic. Thus, in this paper, a systematic review is undertaken in order to integrate research related to several types of sound, both pleasant and unpleasant, specifically noise and music. In addition, it includes as much research as possible to give stakeholders a more general vision about relevant elements regarding methodologies, study subjects, stimulus, analysis, and experimental designs in general. This study has been conducted in order to make a genuine contribution to this area and to perhaps to raise the quality of future research about sound and its effects over ECG signals. This review was carried out by independent researchers, through three search equations, in four different databases, including: engineering, medicine, and psychology. Inclusion and exclusion criteria were applied and studies published between 1999 and 2017 were considered. The selected documents were read and analyzed independently by each group of researchers and subsequently conclusions were established between all of them. Despite the differences between the outcomes of selected studies, some common factors were found among them. Thus, in noise studies where both BP and HR increased or tended to increase, it was noted that HRV (HF and LF/HF) changes with both sound and noise stimuli, whereas GSR changes with sound and musical stimuli. Furthermore, LF also showed changes with exposure to noise. In many cases, samples displayed a limitation in experimental design, and in diverse studies, there was a lack of a control group. There was a lot of variability in the presented stimuli providing a wide overview of the effects they could produce in humans. In the listening sessions, there were numerous examples of good practice in experimental design, such as the use of headphones and comfortable positions for study subjects, while the listening sessions lasted 20 min in most of the studies.

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General health status, music performance anxiety, and coping methods of musicians working in Turkish state symphony orchestras: a cross-sectional study

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This study assessed the general health, music performance anxiety (MPA), and coping methods of musicians working in six state orchestras in Turkey. All musicians working in the state symphony orchestras (n=384) were invited to participate in the study. In face-to-face interviews, the authors administered a questionnaire, which consisted of five sections: sociodemographic information, history of musical performance, health status, general health questionnaire-12 (GHQ-12), and MPA scale. Mann-Whitney U-test, Student's t-test, and Spearman's correlation test were used to analyze the questionnaire data. The 220 musicians who participated included 121 (55%) males and 99 (45%) females, with a mean age of 42.4±11.3 yrs. For musculoskeletal symptoms, 87.6% reported at least one symptom with the most common being pain. For general health status, the GHQ-12 showed 64% of musicians were at low risk, 18.7% at moderate risk, and 17.3% at high risk in terms of mental health. The prevalence of MPA before or during performance was 81.8%, and 60% of musicians stated that performance anxiety negatively affected their performances. Results indicate that musicians working in Turkish state symphony orchestras encounter numerous health problems (tinnitus, hearing loss, musculoskeletal symptoms, etc.) due to their profession. No specific health support is provided, especially education and health service provision.

Il presente studio ha valutato la salute generale, l’ansia da prestazione musicale (MPA) e le strategie di adattamento di musicisti che lavorano in sei orchestre statali in Turchia. Tutti i musicisti che lavorano nelle orchestre sinfoniche di stato (n = 384) sono stati invitati a partecipare allo studio. In interviste faccia a faccia, gli Autori hanno compilato un questionario, costituito da cinque sezioni: informazioni socio-demografiche, storia delle performance musicali, stato di salute, un questionario sulla salute generale (GHQ-12) e la scala MPA. Per analizzare i dati del questionario sono stati utilizzati il test di Mann-Whitney, il test di Student e il test di correlazione di Spearman. I 220 musicisti che hanno partecipato includevano 121 maschi (55%) e 99 femmine (45%), con un’età media di 42.4±11.3 anni. Per i sintomi muscolo-scheletrici, 87.6 % ha riportato almeno un sintomo, tra cui il più comune era il dolore. Per lo stato di salute generale, il GHQ-12 ha mostrato che il 64% dei musicisti erano caratterizzati da un rischio basso, il 18.7% da un rischio moderato e il 17.3% da un rischio alto in termini di salute mentale. La prevalenza di MPA prima o durante un’esibizione è stata dell’81.8%, e il 60% dei musicisti ha dichiarato che l’ansia da prestazione influisce negativamente sulle loro esibizioni. I risultati indicano che i musicisti che lavorano nelle orchestre sinfoniche statali in Turchia vanno incontro a numerosi problemi di salute (acufene, perdita dell’udito, sintomi muscolo-scheletrici, ecc.) a causa della loro professione. Non viene fornito alcun supporto specifico alla salute, in particolare la fornitura di servizi sanitari ed educativi.

The Pierfranco and Luisa Mariani Foundation
Since its beginnings in 1985, the Mariani Foundation has established itself as a leading organization in the field of paediatric neurology by organizing a variety of advanced courses, providing research grants, and supporting specialized care. The Foundation works in close cooperation with major public healthcare institutions, complementing their scientific programs and other activities. In 2009 it became the first private entity in Italy to join the founding members of the Neurologic Institute “Carlo Besta” in Milan. In addition to its services, the Foundation aims, through its continuing medical education courses and its publishing program, to transmit the latest discoveries in the field of paediatric neurology so that they can be applied most effectively in treating or mitigating a large number of paediatric neurologic disorders.

In 2000, the Mariani Foundation has added a new and important dimension to its activities: fostering the study of the multiple links between the neurosciences and music, including music education and early intervention. The results of this commitment are shown first and foremost in "The Neurosciences and Music" conferences, held in Venice (2002), Leipzig (2005), Montreal (2008), Edinburgh (2011), and Dijon (2014). The last congress was held in June 2017 in Boston, in partnership with the Harvard Medical School and Beth Israel Deaconess Medical Center. All these meetings have led to the publication of major volumes in the Annals of the New York Academy of Sciences. By providing the most recent information in these rapidly advancing neurologic fields, the Mariani Foundation intends to be a reliable and informative source for specialists and journalists in this new area of the developmental neurosciences.