



CREATE AN INTELLIGENT TECHNOLOGICAL ARCHITECTURE CAPABLE OF DELIVERING EMBODIED, FLEXIBLE, AND EFFICIENT RHYTHMICAL STIMULATION ADAPTED TO INDIVIDUALS' MOTOR PERFORMANCE AND SKILLS FOR THE PURPOSE OF ENHANCING/RECOVERING MOVEMENT ACTIVITY



Project FP7-ICT-2013-10-610633

## BeatHealth

“Health and Wellness on the Beat”

### Collaborative Project

Personalised health, active ageing and independent living

### Deliverable D6.3

“List of publications and patents resulting from BeatHealth activities”

Due date of deliverable: October 1<sup>st</sup>, 2016

Actual submission date: October 24<sup>th</sup>, 2016

Starting date of the project: October 1<sup>st</sup>, 2013

Duration: 36 months

Lead contractor: UM

Revision: 0.0

Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission services)	
RE	Restricted to a group specified by the consortium (including the Commission services)	
CO	Confidential, only for members of the consortium (including the Commission services)	



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## 1. Publications resulting from BeatHealth activities

### 1.1. Publications in peer-reviewed journal

- [1] Bardy, B. G., Hoffmann, C., Moens, B., Leman, M., & Dalla Bella, S. (2015) Sound-induced stabilization of breathing and moving. *Annals of the New York Academy of Sciences*, 1337, 94-100. doi: [10.1111/nyas.12650](https://doi.org/10.1111/nyas.12650).
- [2] Buhmann, J., Desmet, F., Moens, B., Van Dyck, E., & Leman, M. (2016) Spontaneous Velocity Effect of Musical Expression on Self-Paced Walking. *PLoS ONE* 11(5): e0154414. doi: [10.1371/journal.pone.0154414](https://doi.org/10.1371/journal.pone.0154414)
- [3] Dotov, D. G., Bayard, S., Cochen de Cock, V., Geny, C., Driss, V., Garrigue, G., Bardy, B. G., & Dalla Bella, S. (2016). Biologically-variable rhythmic auditory cues are superior to isochronous cues in fostering natural gait variability in Parkinson's disease. *Gait & Posture*, 28(51), 64-69. doi: [10.1016/j.gaitpost.2016.09.020](https://doi.org/10.1016/j.gaitpost.2016.09.020)
- [4] Dotov, D. G., Bardy, B. G., & Dalla Bella, S. (2016). The role of environmental constraints in walking: Effects of steering and sharp turns on gait dynamics. *Scientific Reports*, 6, 28374. doi: [10.1038/srep28374](https://doi.org/10.1038/srep28374)
- [5] Hoffmann, C. P., & Bardy, B. G. (2015). Dynamics of the locomotor–respiratory coupling at different frequencies. *Experimental Brain Research*, 233(5), 1551-1561. doi: [10.1007/s00221-015-4229-5](https://doi.org/10.1007/s00221-015-4229-5)
- [6] Moens, B., & Leman, M. (2015). Alignment strategies for the entrainment of music and movement rhythms. *Annals of the New York Academy of Sciences*, 1337, 86-93. doi: [10.1111/nyas.12647](https://doi.org/10.1111/nyas.12647)
- [7] Timoney, J., O'Leary, S., Czesak, D., Lazzarini, V., Conway, E. E., Ward, T. E., & Villing, R. C. (2015). The BeatHealth Project: Application to a Ubiquitous Computing and Music Framework, *Journal of Cases in Information Technology*, 17(4), 29-52. doi: [10.4018/JCIT.2015100103](https://doi.org/10.4018/JCIT.2015100103)
- [8] Van Dyck, E., Moens, B., Buhmann, J., Demey, M., Coorevits, E., Dalla Bella, S., & Leman, M. (2015). Spontaneous Entrainment of Running Cadence to Music Tempo. *Sports Medicine - Open*. doi: [10.1186/s40798-015-0025-9](https://doi.org/10.1186/s40798-015-0025-9)
- [9] Van Dyck, & Leman, M. (2016). Ergogenic effect of music during running performance. *Annals of sports medicine and research*, 3(6): 1082.

### 1.2. Conference proceedings

- [1] Bayard, S., Dotov, D. G., Cochen de Cock, V., Torre, K., Bardy, B., & Dalla Bella, S. (2015). Beat complexity and variability may optimize the effects of rhythmic auditory cueing on walk in Parkinson's disease. *Movement Disorders*, 30, S287-S287.
- [2] Hoffmann, C. P., Moens, B., Leman, M., Dalla Bella, S. & Bardy, B. G. (2013) Does Running in Synchrony with Sound Improve Endurance Performance and Save Energy?. Proceedings of the 10<sup>th</sup> International Symposium on Computer Music Multidisciplinary Research (pp. 158-162), Marseille (France): October 15-18, 2013.
- [3] Timoney, J., Lazzarini, V., Ward, T., Villing, R., Conway, E. E. & Czesak, D. (2014). The BeatHealth project: synchronising movement and music. *Fifth Workshop on Ubiquitous Music*, Vitoria (Brazil): October 29 - November 1, 2014.
- [4] Villing, R., Lazzarini, V., Czesak, D., O'Leary, S. & Timoney, J. Approaches for constant audio latency on Android (2015). *Proceedings of the 18th International Conference on Digital Audio Effects (DAFx-15)*, Trondheim, Norway: November 30 – December 3, 2015.

### 1.3. Book chapter

[1] Dalla Bella, S. (2015). Music and brain plasticity. In S. Hallam, I. Cross & M. Thaut (Eds.), *Oxford Handbook of Music Psychology, Second Edition*. Oxford: Oxford University Press.

## 2. Manuscripts in preparation resulting from BeatHealth activities

Buhmann, J., Van Dyck, E., Moens, B., Dotov, D., & Leman, M. *Degree of entrainment as a means to model running behavior.*

Damm, L., Blondel, F., Ihalainen, P., Varoqui, D., & Bardy, B. G. *The ecological representativeness of running on a treadmill.*

Damm, L., Blondel, F., Ihalainen, P., Varoqui, D., Dalla Bella, S., & Bardy, B. G. *Why do we (not) synchronize with the musical beat during running?*

Dotov, D. G., Bayard, S., Cochen de Cock, V., Bardy, B., & Dalla Bella, S. *Beat variability optimizes rhythmic auditory cueing in the parkinsonian walk. Dependence on individual's tendency to synchronize.*

Dotov, D. G., Bayard, S., Cochen de Cock, V., Geny, C., Bardy, B., & Dalla Bella, S. *Heterogeneity of gait response to cueing in Parkinson's disease is related to disease duration.*

Garzo, A., Hernandez, E., Garay-Vitoria, N., Silva, P. A., Cullen, A., Villing, R., Cochen De Cock, V., Ihalainen, P. *A Complete Stakeholder Involvement Process for a Validated Design of a Gait Training System for Parkinson Disease.*

Garzo, A., Hernandez, E., Bonail, B., Montejo, M. *BeatHealth cloud platform: security and privacy compliant design.*

## 3. Patents filled during the life time of the project

No patents have been filled during the 3 years of the project. See deliverable D6.6. for details on exploitation plan of BeatHealth activities.