~~Links-/Rechtshänder erkennen an Bewegungen??, Sachen mit linker und rechter Hand ausprobieren und dann „Selbstsicherheit“ analysieren, oder Sachen machen lassen und schauen, welche Hand genutzt wird (zu wenig MC), es müssten so einfache Übungen sein, dass sie mit beiden Händen erledigbar sind, Vorzeigen, nachmachen, vllt mehrfach durchführen, veränderungen anzeigen??, wird man besser?, wie sehr nähert man sich der „guten“ Seite an~~

Sachen im Raum anordnen, Stapeln?, irgendwohin stellen, etwas malen,

Sachen versuchen regelmäßig zu machen mit/ohne Musik, mit verschiedenen Arten von Musik

~~Tischtennisball mit Schläger hochhalten~~

Irgendwelche Gleichgewichtsübungen (L/R Bein, auf einem Bein stehen)

How much does music disturb one in holding a walking rhythm

Does listening to music change a behaviour

With Which kind of music it is easier to follow the walking rhythm, wie sehr ist man an die Musik gewöhnt?

Does the expression change with different types of music

Metronome, how long does it need to synchronize with new music?

André Novak (01601797):

I want to examine how long the participants need to align their walking to a music rhythm and how well they can keep it. The participants are asked to walk in a self-chosen specific walking rhythm. Then they are confronted with different types of music:

* Hector Berlioz – Symphonie Fantastique, 4. Movement ([Link](https://www.youtube.com/watch?v=sdYRYbjCcJg&t=2300s), 38:20-38:38)
* Rare Earth – Big John is my Name ([Link](https://youtu.be/C2RtDp9RTsU?feature=shared&t=36), 0:36-0:56)
* The Wombats – Greek Tragedy ([Link](https://www.youtube.com/watch?v=9MHmx9nvHqU&t=27s), 0:27-0:48)

The task is to align the walking rhythm to the music. Comparing the alignment capability of the participants to these different types of music I want to examine how synchronisation to music changes with different types of music genres.

For this, markers will be positioned on the toes and heels to capture the walking rhythm. As people use their hands and arms for walking as well, markers will be placed there too.

If needed, I can be later at the MediaLab to perform the recordings.

defining what we want to measure, visualizing (boxplot, diagramms,...)

and how to quantify it

comparison between people

or description of what happens

check on average how well people adapt to music

different types of beat

beat tracking of 20seconds of music

with **sonic visualizer** plugins, oder tap beat with hand

beat tracker plugins (vamp)

gives beat and average tempo of music

people twice the tempo

times values later paste data (link to youtube sended by mr Mühlhans)

export annotation layer

do the same with a step from MC-DATA, combine (two foots, L/R)

what is a step, close to zero in Z, when velocity in near 0

velocity mm/s

biggest problem – how to define a step, in data

also possible with max. velocity

magnitude of velocity, or Z axis

how many steps per time unit

why z in some cases higher/lower

average tempo between the music and comparing these

steps per minute as average value and curve is interesting

1 Schritt Ferse Z unten

Abstract: 300-500w (including references), Style Apa7

Catchy Title

MUSIC MAKES YOU MOVE???, Analysing music-induced walking rhythms

Background of topic/study, research question, used methods can be used to answer it, state if already used by others (reference), state aims, gap in literature

Music has always the ability to make humans move. The beat of the music forces people to move to it, whether it is spontaneous and freely performed (dancing or tapping) or more coordinated (Burger, Thompson, Luck, Saarikallio, & Toiviainen, 2014, p. 1). While many studies focus on the freely music-induced movements (Burger, Luck, Thompson, & Toiviainen, 2012 or Eerola, Luck, & Toiviainen, 2006) there are vanishingly few focussing on walking rhythm induced by music beats. Styns, van Noorden, Moelants, and Leman (2007) analysed walking rhythm alignment to music (and metronome stimuli) and found out that synchronization nearly always happened. Even if people had a hard time synchronizing to the music it always had an impact on their walking tempo. They used GPS devices to track the walking speed. Measuring in a motion capture setting I, besides the walking rhythm alignment to music, want examined how long the participants need to align their walking rhythm to different styles of music and how well they can keep this rhythm. The different music examples were chosen due to their different styles and release dates. This makes a comparison between different music genres and synchronisation to them possible.

For the recording, the six participants and the leader of the course “UE Motion Capture - Quantifying human motion and posture (2023W)” at the University of Vienna were performed a given task. Each participant was asked to find their own walking rhythm for 20 seconds and was then confronted with 3 clips of music with 5 seconds silence in between. The music clips were 21 seconds of “Big John is my Name” by Rare Earth (1973), 18 seconds of the 4th movement of the “Symphonie fantastique” by Hector Berlioz (1830) and 21 seconds of “Greek Tragedy” by The Wombats (2015). The participants were asked to adapt their walking rhythm to each piece of music.

The recording of the experiment participants took place in the MediaLab of the Faculty of Philological and Cultural Studies at the University of Vienna. Software and cameras from the company “Qualisys” were used in a marker-based recording. (MediaLab, 2023) The framerate was 100 frames per second. Markers were placed on toe, heels, shoulders, elbows and arms. For the analysis, the markers from the heels are of greatest relevance because I define a step as the position where the value for the Z-axis of each heel reaches its lowest point during regularly movements. For the processing of the captured data I used the software “Qualisys Track Manager”. For the beat tracking of the music clips I used “Sonic Visualizer and its plugin “INESC Beat Tracker”. The steps I analysed with a Python-script.

Summarize results or state your preliminary results

End abstract with how results answered the initial question, and be self-reflected about possible improvements, what was not possible (limitations), what might have influenced or biased the data, results

* Participants saw others do the experiment, myself knew the music already

References

Keywords (5 good ones): Motion Capture, Music, Walking, walking rhythm, Beat tracking…,

defining what we want to measure, visualizing (boxplot, diagramms,...)

and how to quantify it

comparison between people

or description of what happens

check on average how well people adapt to music

different types of beat

beat tracking of 20seconds of music

with **sonic visualizer** plugins, oder tap beat with hand

beat tracker plugins (vamp)

gives beat and average tempo of music

people twice the tempo

definition of step, Heel Z Value is lowest

do the same with a step from MC-DATA, combine (two foots, L/R)

how many steps per time unit

average tempo between the music and comparing these

steps per minute as average value and curve is interesting

Genaue Auflistung der verwendeten Musik:

* Hector Berlioz – Symphonie Fantastique, 4. Movement (1830, <https://www.youtube.com/watch?v=sdYRYbjCcJg&t=2300s>, 38:20-38:38, last accessed 26.11.2023)
* Rare Earth – Big John is my Name (1973, <https://youtu.be/C2RtDp9RTsU?feature=shared&t=36>, 0:36-0:56, 1973, last accessed 26.11.2023)
* The Wombats – Greek Tragedy (2015, <https://www.youtube.com/watch?v=9MHmx9nvHqU&t=27s>, 0:27-0:48, 1830, 2015, last accessed 26.11.2023)

References

Burger, B., Thompson, M. R., Luck, G., Saarikallio, S. H., & Toiviainen, P. (2014). Hunting for the beat in the body: on period and phase locking in music-induced movement. *Frontiers in Human Neuroscience*. (8).

Burger, B., Luck, G., Thompson, M. R., & Toiviainen, P. (2012). Emotions Move Us: Basic Emotions in Music Influence People’s Movement to Music. *Proceedings of the 12th International COnference on Music Perception and Cognition and the 8th Triennal Conference of the European Society for the Cognitive Sciences of Music*.

Eerola, T., Luck, G., & Toiviainen, P. (2006). An investigation of pre-schoolers’ corporeal synchronization with music. *9th International COnference on Music Perception and Cognition*.

MediaLab (2023). Motion Capture. Retrieved from https://medialab.univie.ac.at/ausstattung/motion-capture/

Styns, F., van Noorden, L., Moelants, D., & Leman, M. (2007). Walking on music. *Human Movement Science*, *26*(5), 769–785. https://doi.org/10.1016/j.humov.2007.07.007