# Ronnie Gardiner Method

## 'sets the brain in motion'

The Ronnie Gardiner Method (RGM) is a cheerful, structured, multi-sensory exercise method for the brain, in which rhythm and music are used to stimulate movement, speech and cognition. Because multiple areas of the brain are activated (including sight, hearing, motor skills, speech, memory) RGM is a powerful way to improve the condition of the brain.

The Ronnie Gardiner Method was developed by the American jazz drummer Ronnie Gardiner in the eighties of the last century. He intended a method to help children with their musical- and motor development. However, it soon became apparent that the method was very suitable for helping people suffering health issues with the central nervous system (aquired brain injury such as stroke, TBI, Parkinson's disease, MS and dementia). Since then the method has been applied in hospitals, rehabilitation centers, in practices and in schools. Other target groups are: children and adults with dyslexia, dyspraxia and ADHD, people with psychiatric disorders, burnout and / or depressive symptoms and for seniors as a Healthy Aging activity. In Sweden, where Ronnie developed RGM, he started training physiotherapists, speech therapists, music therapists and teachers of primary schools to be RGM-practitioners in 1999.

### How does it work

RGM combines rhythm, music, movement, speech, hearing, vision and feeling in a playful way. When doing RGM-exercises the participants read the symbols and "translate" them to the corresponding movement that is performed to the rhythm of music. The color of a symbol indicates whether the movement is to be carried out on the right, left or with both sides. The RGM practitioner uses the symbols to create tailor made exercises for the target group, on music that is suitable for this target group and with certain goals. While executing the movement associated with a specific symbol, the name of this symbol is also pronounced. This activates various parts of the brain <u>simultaniously</u>.

It may sound a bit complicated, but the exercises are gradually built up over time and adjusted to the level of the group (or the individual). RGM can be adjusted to (almost) any level, from very simple to complex exercises, depending on what the target group can handle. The music is also adjusted (as well as possible) to the taste of the participants and a tempo (BPM) is chosen that is suitable for the target group. When performing the exercises symbols are read (visual cortex) and translated into a movement (prefrontal cortex and both temporal lobes), movements are alternated (motor cortex, left and right), words are spoken simultaneously (language / speech centers in the left hemisphere) and listening to - and tuned to - music (including auditory cortex, limbic system and cerebellum), so many different parts of the brain are activated simultaneously. This provides for the construction of new and strengthening of existing neural networks and for more / better connections in the corpus callosum. After all, "neurons that fire together, wire together".

No negative effects of the RGM method are known. There are, however, many reported beneficial effects. The extent to which one experiences these positive effects varies per person and depends on various factors, such as age, motivation, health and the frequency with which one exercises. Improvements are noticeable in children, adults and the elderly, in sick and healthy people.

The possible effects of RGM:

- improvement of cognitive functioning:
  - Concentration
  - Memory
  - thinking speed and cognitive switching
- improving coordination;
- improvement of motor skills;
- an improved body balance;
- improvement of the ability to perform dual tasks
- improvement of both speech,
- improvement of reading and learning ability;
- improvement of social skills;
- increase in self-confidence;
- an improved mood, making people happy;
- increasing the energy level.

#### Parkinson's disease

In RGM lessons for people with Parkinson's disease extra attention is paid to making large movements, training body balance, walking and performing double tasks. RGM has a positive influence on various problem areas. A pilot study in Sweden has shown that there is improvement in the area of:

- cognitive functions: memory and concentration improve
- balance: this makes people fall less quickly
- speech

- performing dual tasks
- general well-being(1)

Most RGM participants with Parkinson's like to move to music, following the structure of the exercises. It gives a sense of satisfaction if it works well. It is also clear that the brain is enormously activated. RGM stimulates the production of dopamine, the neurotransmitter that plays an important role in motor regulation (for example, when starting and stopping) and has a major influence on mood. Add to this the pleasure that people experience together and you have a great addition to the existing treatment for Parkinson's disease.

A study at the University of Linköpping in Sweden into the effects of RGM in Parkinson's disease resulted in a publication in September 2018. The article outlined the theoretical background with regard to Parkinson's disease, however, RGM can be used for various conditions. Conclusion of the study: RGM is an innovative, music-based intervention with the potential to improve various aspects in people with neurological deficits.

#### Mutiple Sclerose (MS)

MS has many different symptoms. Because demyelination can occur in various places in the central nervous system (disappearance of the nerve fiber envelope), complaints can occur in many different areas. This makes it difficult to identify in which area RGM can offer improvement.

Frequently reported improvements after a period of RGM exercises are:

- increase in concentration and memory
- improvement of speech
- improved function of the eyes, both improvement of sight as of reading
- improved coordination
- decrease of motory issues such as stiffness, spasm and loss of strength
- increase in energy
- increase in taxability

The combination of moving to music, such as performed with RGM, results in the production of extra dopamine and serotonin are produced. This generates a pleasant feeling and increase the ability to move.

Participant with MS. "Monday is the best day of the week for me. I then have my RGM group in the morning, which I not only experience as hard work but also great fun. Afterwards I go shopping, something I can only do on Monday, because the RGM recharges me." Participants in a series of RGM lessons scored an average of 27% higher on the Digit Symbol Substitution Test (DSST) after 10 weeks. This internationally recognized test measures change in attention, concentration and information processing speed.

#### Stroke

The therapeutic utility of RGM was first established in the treatment of stroke patients (stroke, also known as stroke or cerebral infarction). The usefulness of the use of RGM in the rehabilitation of these disorders has been established and evaluated at major neurological rehabilitation centers in Sweden. The most important improvements are those of:

- body balance
- sensor-motor control of the affected part of the body
- speech
- concentration
- decrease neglect
- general well-being

"I had a stroke and my condition deteriorated. It looked like I would have to continue in a wheelchair, but I started moving again due to RGM. Nowadays I work full time again and lead a normal life, "Jan Hjalmarssons, Sweden.

The effects of RGM were investigated at the University of Gothenburg into the effect of RGM on recovery after a stroke (chronic phase). In 2017 a publication was published on the research results of the RCT (randomized study with control group), followed in 2018 by a publication on the qualitative part of the study. You can read the results here: <u>publication</u> <u>RCT</u>, <u>summary RCT</u> and publication <u>qualitative research</u>.(2, 3)

#### Dementia

With dementia there is usually a decline in several brain areas. As a result, practical action, language comprehension, insight into one's own situation and memory are often deteriorated. No solution has yet been found for the disease, parts of the brain that have been affected are no longer improving.

What is possible is to continue to use, stimulate and challenge all parts of the brain for as long as possible, so that the condition of the healthy parts of the brain becomes optimal. It has been demonstrated that it is particularly useful to keep the brain 'at work'. In Dementia too, there are still parts of the brain where new brain cells or networks can arise to (partially) maintain or even improve functions. For this it is important that the brain is challenged both

motorically and cognitively. This is done at the RGM to the rhythm of cheerful music. Aa feasiblity study with people with mild Cognitive Impairment showed improvements in both physical measures and cognition.

People with dementia (and their housemates) can, among other things, notice progress on the following points:

- increase in initiative
- better concentration, more in the here and now
- improvement of motor skills
- better overview in situations
- improvement of speech (better understood)
- improve mood

At the RGM for people with dementia or forgetfulness it is of extra importance that music is chosen from the period that the participants were young, preferably from the age of 17-23 years. In a phase where the brain has little memory left, music appears to be an exception. This has to do with the place in the brain where the "musical memory" is located, an evolutionally older and deeper part of the brain.

#### Healthy ageing

One of the greatest discoveries of the last 25 years of brain research is the discovery of the plasticity of the brain. In the book "The brain that changes itself" by researcher / psychiatrist Dr. Norman Doidge describes how, under the influence of sufficient activity and stimuli such as music, movement and mental challenges, new connections in the brain can ensure that, even in old age, lost functions can (partially) recover. In this way you can limit the risk of forgetfulness and dementia.

Doidge also advises aging people to work on balance and coordination to prevent inactivity and fall problems. In his book he discusses the importance of challenging exercises such as dancing and exercises that call for concentration and coordination. These stimulate the maintenance or improvement of our physical, mental and social health.

All the above points are reflected in the RGM exercises: the exercises are challenging for the brain, are done to music and require concentration and coordination. Elderly people participating in RGM programs, experienced improvement of:

- balance
- memory
- coordination
- concentration
- energy level

• mood

By tuning the music to the age of the participants and the cheerful nature of the RGM exercises, the production of neurotransmitters such as Dopamine and Serotonin is stimulated. This has a positive effect on the ability to move and the mood. There is also a strong social aspect of participating in RGM classes, people have fun together and meet new people.

#### References

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2. Bunketorp-Käll L, Lundgren-Nilsson Å, Samuelsson H, Pekny T, Blomvé K, Pekna M, et al. Long-Term Improvements After Multimodal Rehabilitation in Late Phase After Stroke. A Randomized Controlled Trial. Stroke. 2017;48:1916–24.

3. Pohl P, Carlsson G, Bunketorp Käll L, Nilsson M, Blomstrand C. Experiences from a multimodal rhythm and music-based rehabilitation program in late phase of stroke recovery – A qualitative study. PLoS ONE. 2018;13(9):e0204215.