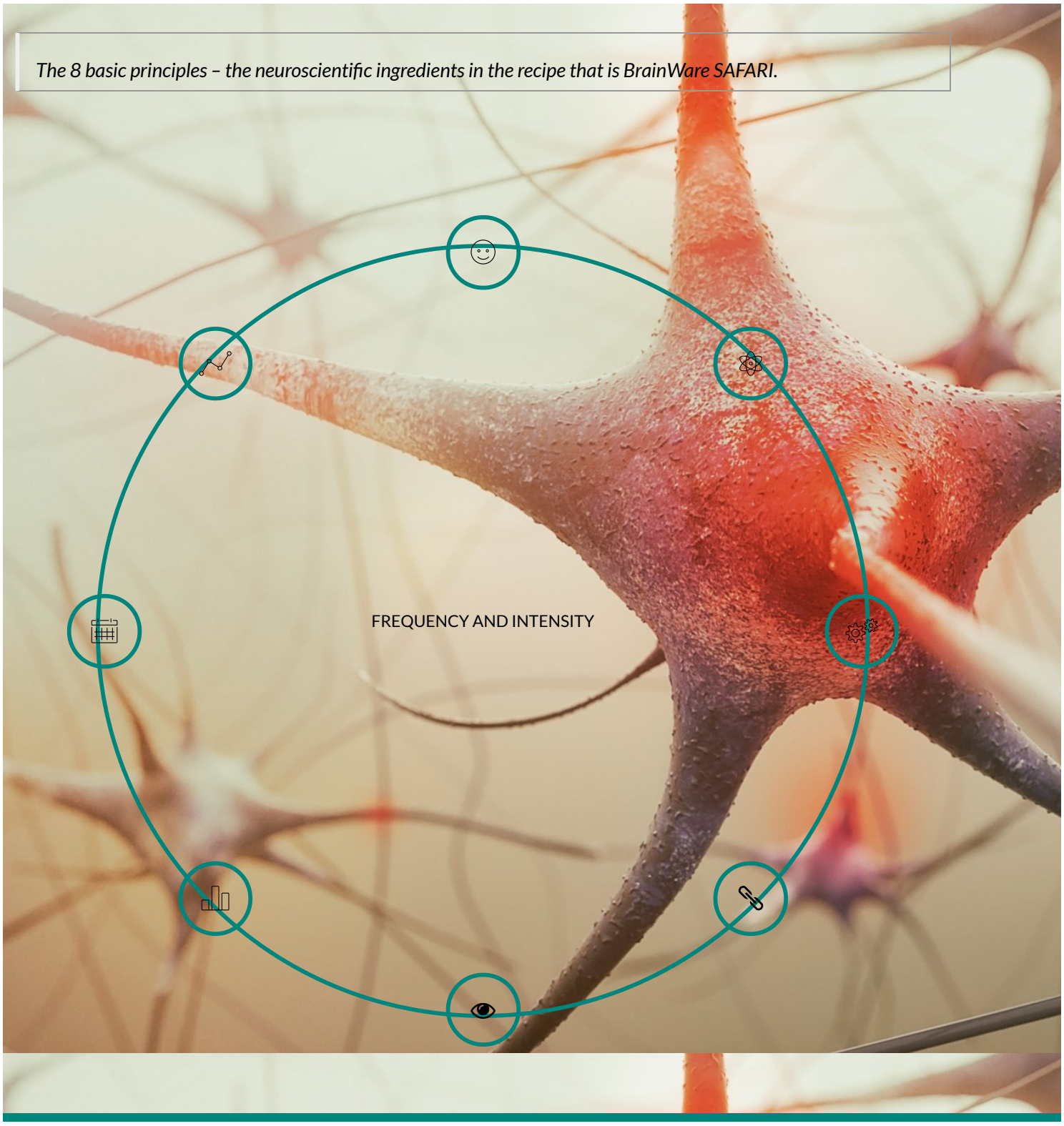

s now known about the brain from neuroscience research, along with proven techniques from decades of clinical practice – and we have combined them with the best practices of video-game techno
ıensive, effective and engaging brain building software on the market. Here are the basic principles – the neuroscientific ingredients in the recipe that is BrainWare SAFARI

'oplasticity.

rain's ability to change and to develop in response to its environment and the demands being placed on it is "neuroplasticity." Essentially, our brains develop by organizing themselves, creating and pru
ons, and networks in response to the environment and our individual experience. Brain development and specific patterns of neural connections are not genetically predetermined in the way that attr
re determined. While intellect and learning ability are guided by our genetic code, they arise in significant part through the process of development. The plasticity of the brain is greater in children, but
change and develop throughout life.

s have focused on the use of computerized techniques, especially video games, to deliver training that can leverage neuroplasticity to enhance brain function and have shown that learning from video
tuations. For example, in one study, training designed to improve working memory (the ability to hold and manipulate information in the mind) was reflected in improvements in fluid intelligence. The
nship between the amount of training and the magnitude of the improvement.

maticity.

shed multiple types of memory, including declarative and procedural memory. When a certain set of steps or processes are performed repeatedly, the processes are embedded in procedural memor
nought to execute (like riding a bike or driving to a familiar location). When a skill or process becomes embedded in procedural memory, it is said to have become automatic. Neural connections are
, leading to the ability to perform a function without consciously thinking about it and requiring less energy than if the skill is not automatic.

m one skill consciously at a time. When multiple cognitive skills are required, as in most learning situations, all but one of those skills must be performed automatically, at the non-conscious level. Whe
es not require conscious thought, it is possible for an individual to perform that skill at the same time as other skills. Basic skills, such as shifting our attention, keeping information in a sequence and
e functioning at the automatic level in order to enable an individual to allocate conscious thought to other activities, such as learning, comparing, deciding, and planning drawing conclusions and the li

;ration (cross-training).

ve) skills are highly integrated in effective brain functioning. When our brains perform a variety of automatic functions simultaneously, those activities must be coordinated to be effective (seeing and r
ample, in eye-hand coordination). If certain skills are weak or deficient, that will impact the efficiency of other mental processes and the overall effectiveness of mental functioning.

r and over can lead to improvement in that skill and ultimately automaticity, but the integration of multiple skills is what pushes critical skills more quickly to the nonconscious level. The approach of p
at the same time, referred to as "cognitive loading," is exploited in BrainWare SAFARI in a comprehensive "cross-training" approach that integrates multiples skills within an exercise and across exercis
s-training significantly enhances the transfer of stronger cognitive skills to tasks beyond the specific tasks that are trained.

al-spatial skills.

80% of what we learn involves our visual system. In fact, vision is by far the most dominant sense, taking up about half of the brain's resources. Visual processing, visualization and spatial-temporal rea
nking. The ability to transform thoughts into images is what drives new concepts, new ideas, new feelings, and ultimately new behaviors. It is said that Albert Einstein processed information primarily
s deaf, but could picture music in his mind.

ticular emphasis on visual processing skills (including visual thinking) – developing the capabilities of the "mind's eye" – and memory. Skills such as visual span (the use of peripheral vision involved for
ning), visual figure-ground, visual sequential and simultaneous processing and visualization are all worked extensively in combination with attention, auditory, memory and reasoning skills.

enge.

urs at the outer edges of our competence. Therefore, sequenced challenges that address the range of each individual's strengths and weaknesses are required to provide the appropriate levels of cha
o far above our current state of development, we will become frustrated and may not persist. If tasks are too easy, we become bored.

es are designed to build from relatively easy levels through more difficult ones. This helps to ensure that the user is working at an appropriate level of challenge. This personalizes the experience in th
more challenged by and spend longer on the levels that address weaker processing areas and less time and effort on the exercises and levels that address areas of strength. The freedom to move am
n different ways and different combinations also helps the individual to optimize the level of intensity and challenge. The exercises in BrainWare SAFARI were designed with the methodical sequencin
e and rewarding repetition). Importantly, the program avoids the kind of predictable progression that would cause the brain would to lose interest and engage with less intensity. BrainWare SAFARI is
ression from one level to the next novel and interesting.

uency and intensity.

al or mental function requires the discipline of repeated challenge over time at an appropriate level of intensity. The brains of experts consume less energy to perform a practiced activity and, in fact,
ut thinking" or without conscious evaluation. We may talk about "muscle memory" (for example for a concert pianist or Tiger Woods on the golf course) but we are actually describing the development
brain. Frequent practice with intensity leads to automaticity of skills.

protocol for BrainWare SAFARI is 30 to 60 minutes, 3 to 5 times per week, for 10 to 14 weeks. This is the level of frequency and intensity that has been shown to drive rapid skill development and signif
er in research. It may be desirable to adjust the recommended protocol for certain users, such as those with more severe learning difficulties, autism, or very young children (the program is recomme
adults).

back.

essary to enable error correction and faster, more accurate learning. The speed of feedback also enables more repetitions to be executed in a given amount of time. In addition to the feedback overtly
there is evidence that success in a video game is related to release of the neurotransmitter dopamine, which is involved in learning and feelings of reward.

diate feedback to the user through various mechanisms built into the game. There is no waiting to have a challenge or level scored; the computer response is instantaneous. Positive encouragement is
e user progresses through the program. At each challenge, at each level, and upon the completion of exercises, positive and entertaining messages are delivered and the character the player has chos
ting the development of cognitive skills the player is experiencing. Finally, in many of the settings in which BrainWare SAFARI is used (schools and various clinical therapies), a coach also plays a role in

gement.

t factor in motivating attention and meaningful participation in a learning activity. In fact, the science and education communities are increasingly recognizing the value of digital game-based learning
haracteristics of good video games motivate initial engagement with a challenging activity and can help sustain motivation as the challenge progresses. Persistence motivated by a feedback loop reinf
echanisms in the brain that reward us for accomplishing something challenging.

ultimedia video-gaming technology with entertaining themes, characters, animation, and interactive elements to stimulate interest. The inherently interesting features of the program help provide intr
vercome more difficult levels. And, unlike many other mental fitness software programs, the exercises in BrainWare SAFARI are mutually reinforcing and supportive. As a result, when a user reaches a
eems extremely difficult, he/she can move to other exercises that help build those same skills in a slightly different way. Frequently upon returning to the troubling exercise, the user passes it with mu

undation for BrainWare SAFARI
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:ontent/uploads/2017/02/The_Research_Foundation_for_BrainWare_Safari_10-12-09-1-1.pdf)

Experience Engaging Evidence-Based Cognitive Development

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