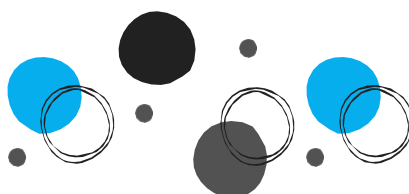


Spin for Well-being: Active lifestyles through therapeutic Table Tennis for individuals with Neurodegenerative diseases (SWAN)

Deliverable D2.1.3 Literature review

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Abstract	This Literature Review (D2.1.3) outlines currently published literature on contents related to the topic of the SWAN project, developed within WP2: Literature review. Neurodegenerative disorders are primarily characterized by neuron loss. The most common neurodegenerative disorders include Alzheimer's and Parkinson's disease. Although there are several medicines currently approved for managing neurodegenerative disorders, a large majority of them only help with associated symptoms. This document briefly describes the possibilities of inclusion of table tennis practice into medical treatment of Alzheimer's, Parkinson's disease, and other NDDs. We then highlight also other resources where NDD patients can find information on current activities related to table tennis practice and benefits of such a practice, supported also with general physical activity. In future researchers must classify the included sport modes based on their cognitive demands to prove the broad skill transfer hypothesis and loads which should be prescribed (open-skill exercising (OSE) and closed-skill exercising (CSE)).
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Introduction

Neurodegenerative diseases (NDDs) are progressive, chronic, and complex diseases affecting the lives of millions of people worldwide, including their physical, cognitive, and psychological condition. Among the most common NDDs are Parkinson's and Alzheimer's, with 1.2 and 10.5 million Europeans living with these diseases, respectively. Parkinson's is primarily associated with motor symptoms, like tremor, freezing of gait, and instability. Alzheimer's is the most common type of dementia, resulting in memory decline, difficulties in planning and solving familiar tasks, confusion with time and location and a lack of coherent thinking in general. The treatment for these diseases consists predominantly of pharmacological therapy which does not slow or reverse the disease and oftentimes has side effects.

Given that there is no cure for these diseases, they pose significant public health and societal-economic challenges. For example, it is estimated that a Parkinson's patient costs around 11k/year on average across Europe, while this number grows to 22k/year for Alzheimer's patients. Given the alarming numbers and those being projected for the next decades, all relevant stakeholders have been focusing on lifestyle changes that could slow down the onset disease or improve the symptoms of post-diagnosis. Physical activity (PA) has emerged as one of the most prominent types of lifestyles modifications. Among other sports, table tennis helps decrease cognitive decline. Studies indicate that playing table tennis regularly can delay the onset of Alzheimer's by as much as five years. In fact, it stimulates parts of the brain responsible for creating new memories (hippocampus) and strengthens brain cells thanks to aerobic activity. Studies have found that regular table tennis practice could improve Parkinson patients' motor functions (such as speech, writing, walking and body balance) over a 6 month-period.

Motivated by these findings, the **main objective** of this project is the development, implementation, and evaluation of a structured table tennis intervention program for individuals with NDDs (mainly Alzheimer's and Parkinson's), promoting social inclusion, health-enhancing physical activity, and equal sports opportunities across Europe for all. The initial step involves a thorough review of scientific literature to understand existing methodologies, outcomes, and future research directions.

TABLE OF CONTENT

1. TABLE TENNIS - MORE THAN JUST A SPORT	5
1.1. Cognitive abilities	6
1.2. Various health benefits	7
1.3. Benefits for children.....	7
1.4. Elderly adults	8
1.5. Summary	8
2. REFERENCES	9
2.1. Parkinsons	9
2.2. Alzheimer	17
2.3. Dementia	19
2.4. General	21
2.5. Web Sites.....	25
2.6. Books.....	25
2.7. Projects	26
2.8. Videos.....	29
3. REFERENCES FOR TABLE TENNIS – GENERAL – NEURO	31
4. REFERENCES FOR PHYSICAL ACTIVITY - GENERAL	34
5. REFERENCES TO GENERAL TOPIC	36

1. TABLE TENNIS - MORE THAN JUST A SPORT

Table tennis is a sport that not only brings physical benefits but also has a positive impact on the mental health and cognitive abilities of individuals and is, therefore, suitable for all age groups. Some scientific research is examining the impact of table tennis on individuals with neurodegenerative diseases, particularly Parkinson's disease. Although research in this area is not yet extensive, the results are promising. Scientists reported since the early 90s (Kawano, 1992) that table tennis is [linked with greater mental ability](#), even into old age, and if we play table tennis regularly it [may help preserve our mental capacities](#).

Children who participate in table tennis practice show better aerobic capacity and physical fitness than those not involved in sports (Pradas et al., 2021). In a study by Elferink-Gemser et al. (2018), young table tennis players achieved above-average results on executive function tests compared to norms. Playing table tennis also improves motor skills and executive functions in children with attention deficit hyperactivity disorder (Pan 2019), autism spectrum disorder (Pan et al., 2017), and in children with mild intellectual disability (Chen et al., 2015).

The positive effects of table tennis are also observed in the elderly. Recreational table tennis playing appears to be associated with improved bone health, body composition, and muscle strength in older men (Naderi et al., 2018). Also, among older adults, serum high-density lipoprotein cholesterol ("good cholesterol") was higher, and both low-density lipoprotein cholesterol ("bad cholesterol") and triglycerides were comparatively lower in regular recreational table tennis participants than in age-matched sedentary participants (Naderi et al., 2021).

Table tennis may be an effective intervention in alleviating the symptoms of dementia and Parkinson's disease. Regular practice of table tennis helps to maintain mental abilities and prevent or delay the symptoms of dementia (Yamasaki, 2022). This can be explained in several ways. Some research findings suggest that table tennis may have a greater impact on cognitive functions than other types of exercise (Jeoung, 2014). This is because table tennis involves multiple muscle systems and brain networks and increases blood flow in brain areas related to motor and frontal lobes (Mori and Sato, 2004; Gao et al., 2021) and contributes to brain plasticity (Yin et al., 2021). Table tennis is also a safe and feasible exercise to improve balance control, physical performance, and mental

health in patients with Parkinson's disease (Olsson, Franzen, & Johansson, 2020; Inoue et al., 2021).

In addition to the physical aspects, we should not neglect the beneficial impact on mental health. Sports are accessible to almost everyone, the game's price is minimal, and there are no age restrictions. As such, it represents an excellent means of promoting social interaction and sociability. Playing this popular game brings people together, creates a relaxed environment, and encourages positive communication. While players actively engage in physical activity, informal conversations, jokes, and friendly competition also spontaneously develop, strengthens interpersonal relationships. We can build social and communication skills through play, maintain friendships, and make new ones. Regular recreational exercise contributes significantly to greater satisfaction with life and physical self-image (Biernat, Buchholtz, & Krzepota, 2018). It can also serve as recreation to promote well-being in the workplace (Hertting et al., 2018).

1.1. Cognitive abilities

Studies have reported that table tennis has a greater positive impact on cognitive function than other types of exercise (Jeoung, 2014), likely due to the involvement of multiple muscle systems and brain networks. One study found that table tennis had a greater impact on cognitive function than other types of exercise, such as dancing, walking, gymnastics, and resistance training, as measured by mean scores on the short-form Mini-Mental State Examination (Jeoung, 2014). Thus, table tennis may be a more effective intervention for preventing cognitive decline and dementia than aerobic exercises. However, further evidence is needed to confirm the effectiveness of table tennis intervention programs.

Mori and Sato (2004) have been first ones who have introduced term “clinical brain sports medicine”. In 1994 they introduced table tennis into brain rehabilitation process. Through table tennis practice three points have been examined: brain blood-flow, brain high function and brain rehabilitation. According to the results of their study it was thought that table tennis treatment had an effect not only on improvement of motor function but on improvement in a patient's attentiveness, concentration, and endurance.

1.2. Various health benefits

Several studies also report that regular gaming can have significant therapeutic benefits for individuals with chronic ischemic heart disease (Shimomura et al., 2004), Parkinson's disease (Inoue et al., 2021), autism spectrum disorder (Pan et al., 2017), attention deficit hyperactivity disorder (Pan et al., 2019), and mild intellectual disability (Chen et al., 2015).

A resting-state functional magnetic resonance imaging study in adults showed that brain networks involved in attentional control, visuomotor processing, and motor output changed during the progression of table tennis skills from novice to advanced players (Gao et al., 2021). Similarly, another functional magnetic resonance imaging study of adults performing a visuospatial task reported changes in neural networks associated with early sensory information processing, subsequent information integration, information matching identification, and late response selection induced by extensive table tennis training (Guo, Li, & Yu, 2017). Together, these findings suggest that training can induce brain plasticity to enhance specialization and adaptability in the visuomotor systems of young or adult experienced players (Yin et al., 2021).

Furthermore, table tennis participants report significantly higher life satisfaction and body self-esteem than those who do not exercise (Biernat, Buchholtz, & Krzepota, 2018).

1.3. Benefits for children

Children who played table tennis also demonstrated higher levels of physical fitness, with greater aerobic capacity (i.e., Vo2max) and hand grip strength, compared to typically developed but sedentary children (Pradas et al., 2021).

Playing table tennis improves motor skills and executive functions in children with attention deficit hyperactivity disorder (Pan et al., 2019) or autism (Pan et al., 2017), and visual perception and executive functions in children with mild intellectual disability (Chen et al., 2015).

Furthermore, young table tennis players performed above average on all Delis-Kaplan Executive Function System tests, which measures higher-level cognitive functions (i.e., metacognition and executive functions), compared to population norms (Elferink-Gemser et al., 2018). Furthermore, a study examining the characteristics of attention network functions showed better executive control (but no differences in alerting or

orienting network functions) in young and adult table tennis players compared to age-matched non-athlete groups (Wang, Guo, & Zhou, 2016).

1.4. Elderly adults

Positive cognitive effects of table tennis training have also been demonstrated in the elderly adults (Tsai et al., 2017). Even recreational play benefits older adults' body composition and lipid profiles (Naderi et al., 2021).

In addition, recreational table tennis play in older men is associated with improved bone health, physical function, and muscle strength (Naderi et al., 2018). Positive cognitive effects of table tennis training have also been demonstrated in older adults (Tsai et al., 2017).

Older recreational table tennis players also had higher total, regional (arm, leg, and lumbar spine) and site-specific (trochanter and Ward's triangle) bone mineral density, lower total and regional (arm, leg, and trunk) fat mass, and lower body fat percentage compared to sedentary participants. In addition, older table tennis players performed better on a short physical performance test and completed a 400-meter walk in a shorter time than age-matched sedentary participants. These findings suggest that regular table tennis play benefits muscle strength, physical performance, and body composition in older adults (Naderi et al., 2018).

Regular play is also associated with improved performance indicators of daily living activities in older adults. Recreational table tennis playing appears to be associated with improved bone health, body composition, and muscle strength in older men (Naderi et al., 2018). Also, among older adults, serum high-density lipoprotein cholesterol ("good cholesterol") was higher, and both low-density lipoprotein cholesterol ("bad cholesterol") and triglycerides were comparatively lower in regular recreational table tennis participants than in age-matched sedentary participants (Naderi et al., 2021).

1.5. Summary

Although research into the effects of table tennis on neurodegenerative diseases is still in its early stages, existing results suggest potential benefits. Table tennis training appears safe and may positively affect motor function, balance, mental well-being and health in

patients with Parkinson's disease. Further research is needed to confirm the long-term effects and mechanisms of this activity on neurodegenerative diseases. Likewise, in collaboration with kinesiologists and medical professionals, suitable loads will be found for various stages of developed diseases.

2. REFERENCES

2.1. Parkinsons

Table tennis for patients with Parkinson's disease: A single-center, prospective pilot study

Inoue, K., Fujioka, S., Nagaki, K., Suenaga, M., Kimura, K., Yonekura, Y., Yamaguchi, Y., Kitano, K., Imamura, R., Uehara, Y., Kikuchi, H., Matsunaga, Y., & Tsuboi, Y. (2020). Table tennis for patients with Parkinson's disease: A single-center, prospective pilot study. *Clinical parkinsonism & related disorders*, 4, 100086.

<https://doi.org/10.1016/j.prdoa.2020.100086>

Link to the paper: <https://pmc.ncbi.nlm.nih.gov/articles/PMC8299968/>

The aim of this study was to assess the effectiveness and safety of table tennis training in patients with Parkinson's. The research was conducted over a 6-month period. Authors wanted to determine whether table tennis training could reduce symptoms in the areas of motor skills, cognitive abilities and psychological well-being of patients. The sample included 12 patients (in the end only 9, as three "dropped out"), who had six hours of table tennis training each week. After both 3 and 6 months, statistically significant improvements were found (in various parts within the selected tests).

"Table tennis, is a form of aerobic exercise that has been shown in the general population to improve hand-eye coordination, sharpen reflexes, and stimulate the brain," said Ken-ichi Inoue, MD, of Fukuoka University in Fukuoka, Japan. "We wanted to examine if people with PD would see similar benefits that may in turn reduce some of their symptoms. While this study is small, the results are encouraging because they show ping-pong, a relatively inexpensive form of therapy, may improve some symptoms of PD. A much larger study is now being planned to confirm these findings."

A Pilot Study of the Feasibility and Effects of Table Tennis Training in Parkinson Disease

Olsson, K., Franzén, E., & Johansson, A. (2020). A Pilot Study of the Feasibility and Effects of Table Tennis Training in Parkinson Disease. *Archives of rehabilitation research and clinical translation*, 2(3), 100064. <https://doi.org/10.1016/j.arrct.2020.100064>

Link to the paper: <https://pubmed.ncbi.nlm.nih.gov/33543090/>

Authors investigated how table tennis training affects patients with Parkinson's disease. This study demonstrates that table tennis training is safe and feasible and can improve balance control, mental well-being and self-rated physical activity levels.

The aim of the study was to determine whether table tennis training is feasible and what effects it has on balance and physical function in people with Parkinson's disease. Nine people with Parkinson's disease (5 men, 4 women), average age 66.9 years, participated in the study. The NT training took place for 10 consecutive weeks, 2x per week for 120 minutes.

Results: Participants reported that exercise had a positive effect on their well-being. The mean score on the Mini-BEST increased from 21.2 before exercise to 23.3 after exercise ($P = 0.093$). Statistically significant positive effects were observed on the MADRS depression scale and the Frändin-Grimby physical activity scale.

Patient With the Posterior Variant of Alzheimer Disease Plays Table Tennis: Study case

Haddad, A., Brunel, G., Indart, S., & Paquet, C. (2023). Patient With the Posterior Variant of Alzheimer Disease Plays Table Tennis: Study case. *Neurology*, 101 (17) 761-762. <https://doi.org/10.1212/WNL.00000000002076>

Link to the paper: <https://www.neurology.org/doi/10.1212/WNL.0000000000207650>

Authors report the case of a 59-year-old man. Neurocognitive examination found Balint syndrome (optic ataxia, ocular apraxia) and a left hemi-neglect. Neuropsychological tests found visuoconstructive apraxia, agraphia, and simultanagnosia. Brain MRI and

fludeoxyglucose-PET found posterior cortical atrophy (PCA) with associated hypometabolism. CSF biomarkers and amyloid-PET were in favor of Alzheimer disease. Despite patient's severe visual impairment, he could still play ping-pong.

Sports biomechanical analysis for rehabilitation of Parkinson's disease case study table tennis

Velandia, D. M. P., López, A. M. A., Hernández, B., & Ruben, D. (2021). Análisis biomecánico deportivo para rehabilitación de la enfermedad de parkinson caso de estudio tenis de mesa (Sports biomechanical analysis for rehabilitation of Parkinson's disease case study table tennis). 19th LACCEI International Multi-Conference for Engineering, Education, and Technology: "Prospective and trends in technology and skills for sustainable social development" "Leveraging emerging technologies to construct the future", Buenos Aires - Argentina, July 21-23, 2021. DOI: <http://dx.doi.org/10.18687/LACCEI2021.1.1.618>

This article presents an investigative analysis which is focused on the study of different physical and biomechanical parameters of the most important strokes of table tennis in order to determine the efficiency of this sport as a non-invasive treatment of degenerative neuropathies such as Parkinson's, generating a biomedical solution that allows mitigating the symptoms that occur when the disease is in a mild or moderate state, improving the quality of life of these patients.

Short communications published material

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2.2. Alzheimer

The Beneficial Impacts of Table Tennis: Mitigating Alzheimer's Disease

Guo, K. (2024). The Beneficial Impacts of Table Tennis: *Mitigating Alzheimer's Disease*. *Pre-Collegiate Global Health Review*, University of Toronto Schools, Toronto, Ontario, Canada

Link to the paper: <https://www.pghr.org/post/the-beneficial-impacts-of-table-tennis-mitigating-alzheimer-s-disease>

This article summarizes the benefits of practicing table tennis for Alzheimer's patients. It consists of the following paragraphs:

- *Introduction to Alzheimer's Disease*
- *Benefits of physical activity in neurocognition*
- ***Specific benefits and importance of table tennis as preventative in Alzheimer's***
- *Conclusion/Takeaways/Policies*

The article also summarizes the following articles that are useful for the issue at hand:

Heilmann, F., Weinberg, H., & Wollny, R. (2022). The impact of practicing open- vs. closed-skill sports on executive functions—a meta-analytic and systematic review with a focus on characteristics of sports. *Brain Sciences*, 12(8), 1071. <https://doi.org/10.3390/brainsci12081071>

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For Alzheimer's and dementia patients, pingpong is a game - and therapy

Chawkins, S. (2011). For Alzheimer's and dementia patients, pingpong is a game -- and therapy. Available at [Medical express, Available at For Alzheimer's and dementia patients, pingpong is a game -- and therapy](#)

2.3. Dementia

Benefits of Table Tennis for Brain Health Maintenance and Prevention of Dementia

Yamasaki, T. (2022). Benefits of Table Tennis for Brain Health Maintenance and Prevention of Dementia. *Encyclopedia*, 2, 1577–1589.
<https://doi.org/10.3390/encyclopedia2030107>

Link to the paper: <https://www.mdpi.com/2673-8392/2/3/107>

Yamasaki (2022) conducted a literature review on the positive effects of table tennis on dementia symptoms.

Several such studies have reported that regular table tennis practice can help maintain mental abilities and prevent or delay senile dementia (Jeoung, 2014).

During table tennis practice or match, in addition to aerobic exercise, players must estimate the rotation, direction, and speed of the ball in milliseconds and immediately decide how to respond, which are cognitive tasks that require the simultaneous activation of multiple neural networks. In other words, table tennis is like an intervention method that combines exercise and cognitive training and therefore may be more effective than other aerobic exercises for preventing dementia.

Preventive Strategies for Cognitive Decline and Dementia: Benefits of Aerobic Physical Activity, Especially Open-Skill Exercise

Yamasaki T. (2023). Preventive Strategies for Cognitive Decline and Dementia: Benefits of Aerobic Physical Activity, Especially Open-Skill Exercise. *Brain Sci.*, 13(3):521. doi: 10.3390/brainsci13030521.

Link to the paper: [Preventive Strategies for Cognitive Decline and Dementia: Benefits of Aerobic Physical Activity, Especially Open-Skill Exercise - PubMed](#)

Table tennis has already been clinically applied as “table tennis therapy” to patients with cognitive impairment, thereby suggesting that this sport is an excellent OSE for the maintenance of brain health in the elderly.

Short communications published material

Fighting fit: How table tennis helps elderly live well with dementia

McAlees, M. (2016). Fighting fit: How table tennis helps elderly live well with dementia. Carehome.co.uk, Available at [Fighting fit: How table tennis helps elderly live well with dementia](#)

Why playing ping pong is great for the brain and could help prevent dementia

Stoppard, M. (2025). Why playing ping pong is great for the brain and could help prevent dementia. Available at [Why playing ping pong is great for the brain and could help prevent dementia - Dr. Miriam Stoppard](#)

Tischtennis für Menschen mit Demenz und Angehörige

TT for people with Dementia from a club: [Table tennis for people with dementia and relatives | Table tennis – health sports](#)

"Tischtennis bewegt Menschen mit Demenz"

TT for people with Dementia from the German Federation: [Tischtennis bewegt Menschen mit Demenz - tischtennis.de](#)

Il cervello dei pongisti funziona meglio

Asd Tt Aquile Azzurre (2014). Il cervello dei pongisti funziona meglio. Asd Tt Aquile Azzurre, Available at [Il cervello dei pongisti funziona meglio](#)

2.4. General

Table tennis encourages movement and brings joy to people who are struggling with multiple sclerosis, Parkinson's and Alzheimer's disease

Kerwin McCrimmon, K. (2024). Table tennis encourages movement and brings joy to people who are struggling with multiple sclerosis, Parkinson's and Alzheimer's disease. UCHHealth, Available at <https://www.uchealth.org/today/people-dealing-with-ms-parkinsons-and-alzheimers-benefit-from-ping-pong/>

Table tennis encourages movement and brings joy to people struggling with multiple sclerosis, Parkinson's and Alzheimer's disease. Article also mentions the Neuroping program, among other facts.

Long-term table tennis training alters dynamic functional connectivity and white matter microstructure in large scale brain regions

Zheng, C., Cao, Y., Li, Y., Ye, Z., Jia, X., Li, M., Yu, Y., & Liu, W. (2024). Long-term table tennis training alters dynamic functional connectivity and white matter microstructure in large scale brain regions. *Brain Research*, 1838, 148889. <https://doi.org/10.1016/j.brainres.2024.148889>

Link to the paper: <https://www.sciencedirect.com/science/article/abs/pii/S0006899324001434>

Quite a complex study, where authors used magnetic resonance imaging to investigate functional and structural changes in brain regions in 20 NT players compared to a control group.

The Effect of Table Tennis Practice on Mental Ability Evaluated by Kana-Pick-Out Test

Kawano, M.M., Mimura, K., & Kaneko, M. The effect of table tennis practice on mental ability evaluated by Kana-Pick-out test. *Int. J. Table Tennis Sci.* 1992, 1, 57–62. [[Google Scholar](#)]

Link to the paper:

https://sasportssience.blob.core.windows.net/ijttts/IJTTS_1_pdf%20files/IJTTS_1_57_62_Kawano_The%20effect%20of%20Table%20Tennis%20Practice.pdf

The possibility of table tennis practice to prevent or delay mental deterioration was studied on table tennis players over age fifty in various regions of Japan, using the Kaneko method or Kana-pick-out test. It is evident from this study that table tennis players preserve far better mental ability even in the older age compared with non-players.

Can Table Tennis Extend Lifespan? An Analysis of Its Impact on Physical Health, Brain Function, and Mental Well-being

Marta, P., Ossolińska, A., Huzarski, F., Ferfecka, G., Pawetek, K., Stolarska, L., Rosa-Bończak, M., Morawiecka, N., Carlton, O., & Kłosowicz, W. Can Table Tennis Extend Lifespan? An Analysis of Its Impact on Physical Health, Brain Function, and Mental Well-being. *Journal of Education, Health and Sport*. Online. 10 February 2025. Vol. 78, p. 57427.

Link to the paper:

https://www.researchgate.net/publication/388859090_Can_Table_Tennis_Extend_Lifespan_An_Analysis_of_Its_Impact_on_Physical_Health_Brain_Function_and_Mental_Well-being

This is a more theoretical overview of the field - the article summarizes the positive effects of practicing table tennis, such as: improved body composition, better coordination, reduced risk of cardiovascular diseases and improved functioning of the musculoskeletal system + promotes the development of cognitive functions, such as reflexes, anticipation and memory. It also touches on the effects on patients with

Parkinson's disease, dementia or mild cognitive impairment. It mentions the positive effects on mental health, as it reduces stress levels and improves quality of life through social inclusion and satisfaction with the game.

The authors emphasize that table tennis should be included in rehabilitation programs and health promotion activities in all age groups.

Static and dynamic resting-state brain activity patterns of table tennis players in 7-Tesla MRI.

Li, Y., Zhao, M., Cao, Y., Gao, Y., Wang, Y., Yun, B., Luo, L., Liu, W., & Zheng C (2023). Static and dynamic resting-state brain activity patterns of table tennis players in 7-Tesla MRI. *Front. Neurosci.*, 17:1202932. doi: 10.3389/fnins.2023.1202932

Link to the paper: [Frontiers | Static and dynamic resting-state brain activity patterns of table tennis players in 7-Tesla MRI](#)

Findings of this research suggest that table tennis players demonstrate altered visuomotor transformation and executive function pathways. Both pathways involve the IITG, which is a vital node in the ventral visual stream. These static and dynamic analyses provide complementary and overlapping results, which may help us better understand the neural mechanisms underlying the changes in intrinsic brain activity and network organization induced by long-term table tennis skill training.

Short communications published material

The Olympics for the Rest of Us: How Ping-Pong Can Help Your Brain

Theimer, S. (2012). The Olympics for the Rest of Us: How Ping-Pong Can Help Your Brain. Mayo Clinic, Available at [The Olympics for the Rest of Us: How Ping-Pong Can Help Your Brain - Mayo Clinic News Network](#)

'I'm a Longevity Doctor, and I Always Recommend This Game for a Longer, Healthier Life'

Sloan, E. (2022). 'I'm a Longevity Doctor, and I Always Recommend This Game for a Longer, Healthier Life'. Well+good. Available at ['I'm a Longevity Doctor, and I Always Recommend This Game for a Longer, Healthier Life'](#)

Table Tennis and Brain Health: A Winning Combination

Win, K. (2025). Table Tennis and Brain Health: A Winning Combination. PingFriend.com, Available at <https://pingfriend.com/articles/en/67c06de6febc638e32198fd4>

Table tennis: One of the world's best brain sports

Frankel, D. (2023). Table tennis: One of the world's best brain sports. *Independent Australia*. available at [Table tennis: One of the world's best brain sports](#)

Ping pong players exhibit superior brain structure and function, study finds

Dolan, E.W. (2024). Ping pong players exhibit superior brain structure and function, study finds. PsyPost. Available at [Ping pong players exhibit superior brain structure and function, study finds](#)

Surprising New Way to Boost Brain Health: Ping-Pong!

BottomLineInc (2018). Surprising New Way to Boost Brain Health: Ping-Pong! Available at [Surprising New Way to Boost Brain Health: Ping-Pong! - Bottom Line, Inc.](#)

There is Something Exceptional About Table Tennis

ITTF Foundation (2021). There is Something Exceptional About Table Tennis. Available at [There is Something Exceptional About Table Tennis - ITTF Foundation](#)

Le ping-pong au service des maladies neurodégénératives

Cabut, S. (2020). Le ping-pong au service des maladies neurodégénératives, Le Monde. Available at [Le ping-pong au service des maladies neurodégénératives](#)

Table tennis and the brain

PingPong Depot (2020). Table tennis and the brain. Ping Pong Depot. Available at [Table tennis and the brain – BLOG](#)

These 5 Physical Activities Improve Brain Health

Amen Clinics (2021). These 5 Physical Activities Improve Brain Health. Amen Clinics. Available at: [These 5 Physical Activities Improve Brain Health | Amen Clinics Amen Clinics](#)

2.5. Web Sites

Japan Table Tennis Therapy Association. Available online: <https://www.takkyu-ryoho.or.jp/> (accessed on 30 August 2022).

Bounce Alzheimer's Therapy Foundation. Available online: <https://www.batfoundation.com/> (accessed on 30 August 2022).

[Research and Development – BAT Foundation – Drug Free Alzheimer's Table Tennis Therapy](#)

Ping Pong Parkinsons - [PingPongParkinson](#)

[PingPongParkinson Deutschland e. V. – ist der bundesweite Zusammenschluss von kooperierenden Vereinen und Einzelpersonen, der sich – mit dem Mittel Tischtennis – überwiegend ehrenamtlich um Personen mit Parkinson und deren Angehörige kümmert.](#)

[PingPongParkinson® ? - PingPongParkinson Schweiz](#)

2.6. Books

Komac, G. (2024). Ping Pong terapija (Ping-pong therapy). Trepetlika: Maribor

Barbera, A. (2023). Neuropong Handbook. Fort Collins.

Pinpongparkinson Deutschland e.v. (2021). Tischtennis gegen parkinson informationen - Soziale und medizinisch therapeutische Aspekte. Available at [Microsoft Word - PPPInfomedizinischeundsozialeAspekte.docx](#)

Boomhuis, T. (2024). *Tischtennis – das Trainingsbuch für jederman und gegen Parkinson*. Nordhorn: Thorsten Boomhuis.

Mikulič, S. (2024). *Effect of table tennis exercise on posture and gait in individuals with Parkinson's disease*. [Masters thesis, University of Ljubljana]. Available at [RUL - Učinek vadbe namiznega tenisa na držo in hojo pri bolnikih s Parkinsonovo boleznijo : magistrsko delo](#)

Yang, H.W. (2023). *The effectiveness of exercise interventions in patients with dementia: systematic review* [Master's thesis, National Taiwan University]. NTU Theses and Dissertations Repository. <http://tdr.lib.ntu.edu.tw/jspui/handle/123456789/83295>

2.7. Projects

NeuroPong Program

Authors are offering a program of table tennis tailored to people with neurodegenerative conditions and other neurological conditions. Sessions are structured as a form of neurological exercise/rehabilitation and physical therapy.

Ping4Alzheimer (FTTF)

In France, the France Alzheimer Association and the French Table Tennis Federation have partnered to promote table tennis among patients with neurodegenerative diseases such as Alzheimer's. Programs such as Ping4Alzheimer have proven successful in improving social interaction, balance, and concentration among participants. Such programs have also spread to other countries such as the United Kingdom and the United States.

TT4Health – ITTF Foundation

TT4Health promotes an infinite number of health benefits on a social, mental and physical level through table tennis. Set up is easy, space requirements very low, anybody can play even without instructions.

DTTB - Program of Table Tennis for people with Dementia, from the German Federation, supported by the German NOC: [220911d_Projektdokumentation__dttb_menschen-mit-demenz_210x210_v9.pdf](#)

Projektdokumentation: Sport bewegt Menschen mit Demenz Tischtennis für Menschen mit Demenz und ihre Angehörigen (Project documentation: Sports engage people with dementia - table tennis for people with dementia and their relatives.)

DOSB – Program with more general physical activity – including also table tennis: [Sport bewegt Menschen mit Demenz](#)

Sport is an integral part of life for many people. This should remain the case even if someone is affected by dementia. The project "Sports Moves People with Dementia" by the German Olympic Sports Confederation contributes to this. Together with the German Alzheimer Society, it provides materials, informs, and promotes the inclusion of people with dementia in sports. Because those who are active in a club remain in the midst of life.

DOSB - Same program as above but another document, comparing different activities, not only table tennis: [KURSKONZEPT](#)

Currently, about 1.7 million people live with dementia in Germany. Forecasts show that the proportion of people with dementia in the German population will increase by two and a half times in the next 50 years. In light of the existing care problem, this necessitates a critical examination of the current and planned treatment options. An important and effective therapeutic measure for treating the symptoms of dementia is regular physical activity. Studies have shown that the risk of developing dementia decreases or that the physical and cognitive abilities of individuals with existing dementia can be positively influenced.

Investigadores Españoles estudian los beneficios del tenis de mesa en los enfermos de párkinson

Doc: [immedicohospitalario_beneficios_tenis_mesa_46833_02123523.pdf](#)

Link: [Los beneficios del tenis de mesa en los enfermos de párkinson | IM Médico](#)

Various Spanish studies investigate the benefits of sports for patients with Parkinson's disease. Specifically, table tennis is proposed as an exercise that impacts motor and cognitive skills, as it improves concentration, memory, and balance. Several experts have pointed it out as an optimal sport for rehabilitation in patients with mild and moderate Parkinson's disease due to the implementation of systematic and repetitive movements that help strengthen muscles, reducing stiffness and increasing coordination, as well as improving balance, flexibility, and movement during practice. Additionally, research is also being conducted on the benefits of playing golf and other physical activities in this neurological disease.

Table Tennis against Alzheimer's – the Art of Inclusion - [Alzheimer Bulgaria](#)

Table Tennis against Alzheimer's – the Art of Inclusion project aims at proposing pilot action for dissemination of the benefits of table tennis among the chosen target groups and at demonstrating good practices for inclusion.

Effects of table tennis interventions in neurodegenerative diseases

No access to this project. Leader of the project is: Pere Bosch-Barceló. Link: <https://osf.io/z3wma/>

Quantitative MRI and cognitive measures in patients with Alzheimer's Disease before and after Table Tennis

No access to this project. Leader of the project is: Matthew Kempton. Link: [Quantitative MRI and cognitive measures in patients with Alzheimer's Disease before and after Table Tennis - King's College London](#)

2.8. Videos

Benefits of Table Tennis for Brain Health Maintenance and Prevention of Neurodiverse Disorders - Video: Available at:

https://www.youtube.com/watch?v=tkbj_PU6ok4

This Sport Is A Game Changing Therapy For Alzheimer's & Cognitive Decline - Video: Available at: <https://www.youtube.com/watch?v=H8V3M8EnW3s>

Can Ping Pong Help Parkinson's? Video: Available at: [Can Ping Pong Help Parkinson's? | Inside Penn Medicine's Community Program](#)

Kann Tischtennis gegen Parkinson helfen? Available at: [Kann Tischtennis gegen Parkinson helfen? | DW Reporter](#)

Video about people with dementia practicing TT – 27/03/2025. Available at: <https://www.zdf.de/nachrichten/heute-in-deutschland/demenzkrankte-spielen-tennis-100.html>

Documentary about TT for PwP – 2023. Available at: [\(5\) Ping-Pong against Parkinson's | DW Documentary - YouTube](#)

Du ping-pong pour lutter contre la maladie de Parkinson - TT for PwP – Nov 2024. Available at: <https://www.youtube.com/watch?v=DBRQzn1xDg0>

France Parkinson's video about 2024 WPTTC and Parlons Recherche conferences. Available at: [Ping Parkinson - Championnats du Monde 2024 Maizières-lès-Metz](#)

French Table Tennis National Open of Parkinson's - 31/03/2024. Available at: [Open national Ping Parkinson 2024 - Boulogne-Billancourt](#)

Table tennis for ALZ, description of a session (from 4:18 to 7:37) - 2023: [PING ET ALZHEIMER - Témoignage d'un entraîneur](#) . (Documentary about Parkinson's disease, not only about TT, but TT parts starting at 7:26 and 25:17 from the media Arte).

La maladie de Parkinson - La recherche avance | ARTE / Parkinson's Disease – Advances in Research - in French – 2024 .Available at: <https://www.youtube.com/watch?v=aDtPCMxdysc>

Parkinson - Forschung bringt Hoffnung | Doku HD Reupload | ARTE Parkinson – Research Brings Hope | Documentary HD Reupload | ARTE – the same as previous in German. Available at: <https://www.youtube.com/watch?v=7jjD5qUbGZY>

Ping-pong serves up therapy for mind and body among people with Parkinson's disease - 2023. Available at: <https://www.youtube.com/watch?v=JivSzx88f3g>

Navin P. Kumar - Table Tennis Champion with Parkinson's - 2022. Available at: (4) [Navin P. Kumar - Table Tennis Champion with Parkinson's - YouTube](#) (Extract from a longer documentary: [The Long Road to Hope: Ending Parkinson's Disease](#))

Suburban residents use ping pong to fight progression of Parkinson's disease - 2024: [Suburban residents use ping pong to fight progression of Parkinson's disease](#)

Le ping pong pour combattre la maladie de Parkinson - Available at: https://www.franceinfo.fr/sports/handisport/video-le-ping-pong-pour-combattre-la-maladie-de-parkinson_6881066.html

Frank Elstner empfiehlt Tischtennis gegen Parkinson – Available at: [Frank Elstner empfiehlt Tischtennis gegen Parkinson – PingPongParkinson Deutschland e. V.](#)

Tennis de table pour les malades de Parkinson – Available at: [Tennis de table pour les malades de Parkinson](#)

The patient experiencing posterior variant of Alzheimer disease playing ping-pong. Video: Available at <https://www.neurology.org/doi/10.1212/WNL.0000000000207650>

VIDÉO - Maladie d'Alzheimer : le tennis de table comme thérapie. Video: Available at: <https://www.francebleu.fr/infos/sante-sciences/video-maladie-d-alzheimer-le-tennis-de-table-comme-therapie-9783007>

Le tennis de table, un sport qui rend service. Video: Available at: [Le tennis de table, un sport qui rend service](#)

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