Supplementary Table S1. General characteristics of the studies in children with ADHD.

First autor (Year); design	Participants	Intervention	Outcomes (assessment tool)	Results
Shao-Hsia Chang (2022); Randomized	Sample Size: 48 children with ADHD Completed the program: 48 Dropouts and cause: 0 TTG: n=16 (boys: 13, girls: 3) Mean age ± SD: 8.31 ± 1.30 years Right-handed: 13 Left-handed: 3 CG1: n=16 (boys: 13, girls: 3) Mean age ± SD: 8.38 ± 1.20 years Right-handed: 14 Left-handed: 2 CG2: n=16 (boys: 13, girls: 3) Mean age ± SD: 8.38 ± 1.31 years Right-handed: 14 Left-handed: 2	Duration: 12 weeks Frequency: 3 sessions/week Session duration: 60 minutes TTG: Structured TT program including: a) basic exercises; b) attention and cognitive stimulation exercises; c) eye-hand coordination exercises. CG1: Virtual TT program on Nintendo Wii consisting of 3 mini-games: Target TT, Exciting TT, and Matching TT. Frequency: 3 times/week, 1 hour of exercise. CG2: No training	Executive Function: -Stroop Color-Word Test -The Wisconsin Card Sorting Test Graphomotor Function: -Graphomotor Test	Intragroup: -Improvement in all characteristics of the graphomotor test in TTG ($p<0.01$) -Improvement in all characteristics of the graphomotor test in CG1 ($p<0.01$) -Decrease in the total number of errors (WCST) in TTG ($p<0.01$) -Decrease in perseverative response (WCST) in TTG ($p<0.01$) -Improvement in TTG in the Color-Word Test ($p<0.01$) -Improvement in CG1 in the Color-Word Test ($p<0.05$) Intergroup: -Higher performance in the graphomotor test in TTG and CG1 compared to CG2 -Greater improvement in the Stroop Color-Word Test in TTG and CG1 compared to CG2 ($p=0.017$)

Chien-Yu Pan (2019); comparative	Sample size: 60 children Completed the program: 60 Dropouts and cause: 0 TTG: n=15 children with ADHD (6 without medication and 9 with) Mean age ± SD: 9.08 ± 1.43 years Height: 134.35 ± 11.55 cm Weight: 32.30 ± 10.61 kg BMI: 17.55 ± 4.00 kg/m^2 GM1: n=15 children with ADHD (6 without medication and 9 with) Mean age ± SD: 8.90 ± 1.66 years Height: 134.00 ± 9.97 cm Weight: 32.89 ± 9.60 kg BMI: 18.14 ± 4.24 kg/m^2 CG2: n=30 typical development children Mean age ± SD: 9.14 ± 1.54 years Height: 135.52 ± 12.27 cm Weight: 35.14 ± 11.21 kg BMI: 18.78 ± 4.00 kg/m^2	Duration: 12 weeks Frequency: 2 sessions/week Session duration: 70 minutes TTG: TT program structured as: warm-up, basic skills, executive function training, group games, and cool-down. CG1: No change in lifestyle. CG2: No change in lifestyle.	Locomotor skills and object control: -Gross Motor Development–2 Test -Stroop Color-Word Test -Wisconsin Card Sorting Test	Intragroup: -Locomotor skills improved in TTG (+5.13) ($p<0.01$) -Object control improved in TTG (+5.20) ($p<0.01$) -Locomotor skills improved in CG1 (+1.27) ($p<0.01$) -Locomotor skills improved in CG2 (+4.63) ($p<0.01$) -Object control improved in CG2 (+2.23) ($p<0.01$) -Stroop Color-Word condition improved in TTG (+8.63) ($p<0.01$) -Stroop Color-Word condition improved in CG2 (+4.30) ($p<0.01$) -Improvement in the total number of correct responses (WCST) in TTG (+10.93) ($p<0.01$) -Decrease in perseverative errors (WCST) in TTG (-10.63) ($p<0.01$) -Decrease in perseverative errors (WCST) in CG2 (-3.17) ($p<0.01$) -Improvement in the number of categories completed (WCST) in TTG (+1.60) ($p<0.01$) -Improvement in the number of categories completed (WCST) in CG1 (+0.67) ($p<0.05$) -Improvement in the number of categories completed (WCST) in CG2 (+0.68) ($p<0.01$) Intergroup: -Improvement in locomotor skills (+3.33) and object control (+4.67) in TTG compared to CG1 -Improvement in locomotor skills (+3.63) and object control (+3.63) in CG2 compared to CG1 -TTG (+8.20) and CG2 (+8.13) improved in the Stroop Color-Word condition compared to CG1 -Improvement in the total number of correct responses (WCST) in TTG (+9.80) compared to CG1

Chien-Yu_Pan (2016); randomized	Sample size: 32 children Completed the program: 32 Dropouts and cause: 0 TTG1: n=16 children with ADHD (9 of them on medication) Mean age ± SD: 8.93 ± 1.49 years Weight: 30.68 ± 8.71 kg Height: 132.86 ± 11.64 cm BMI: 17.11 ± 2.87 kg/m^2 TTG2: n=16 children with ADHD (9 of them on medication) Mean age ± SD: 8.87 ± 1.56 years Weight: 32.62 ± 9.34 kg Height: 133.73 ± 9.69 cm BMI: 18.07 ± 4.10 kg/m^2	Duration: 12 weeks Frequency: 2 sessions/week Session duration: 70 minutes TT program focused on improving: motor skills, social behaviors, and cognitive functions. Each session will consist of the following phases: warm-up, motor skills training, executive function training, group games, and cool-down. TTG$_1$: Performed the intervention and subsequently acts as CG. TTG$_2$: Starts as CG and subsequently performs the intervention.	Motor skills: -Bruininks-Oseretsky Test 2 Social behavior: -Chinese version of the Child Behavior Checklist Neuropsychological measures: -Stroop Color-Word	**Intragroup:** <u>Phase 1 (after the first 12 weeks):</u> -TTG$_1$ improved strength and agility scores (BOT-2) ($p<0.01$) -TTG$_1$ improved the total motor composite (BOT-2) ($p<0.01$) -Decrease in social problems scores (CBCL) in TTG$_1$ ($p<0.01$) -Decrease in attention problems scores (CBCL) in TTG$_1$ ($p<0.01$) -Decrease in aggressive behaviors scores (CBCL) in TTG$_1$ ($p<0.01$) -Decrease in externalizing problems scores (CBCL) in TTG$_1$ ($p<0.01$) -Decrease in total social problems (CBCL) in TTG$_1$ ($p<0.01$) -Improvement in Stroop Color-Word in TTG$_1$ ($p<0.01$) <u>Phase 2 (From week 12 to 24):</u> -TTG$_2$ improved strength and agility scores (BOT-2) ($p<0.01$) -TTG$_2$ improved the total motor composite (BOT-2) ($p<0.01$) -Decrease in social problems scores (CBCL) in TTG$_2$ ($p<0.01$) -Decrease in attention problems scores (CBCL) in TTG$_2$ ($p<0.01$) -Decrease in aggressive behaviors scores (CBCL) in TTG$_2$ ($p<0.01$) -Decrease in externalizing problems scores (CBCL) in TTG$_2$ ($p<0.01$) -Decrease in total social problems (CBCL) in TTG$_2$ ($p<0.01$) -Improvement in Stroop Color-Word in TTG$_2$ ($p<0.01$) **Intergroup:** TTG$_1$ had a longer-lasting residual exercise effect than TTG$_2$.

BMI: body mass index; CG: control group; SD: standard deviation; TTG: table tennis group.

Supplementary Table S2. General characteristics of studies in children with DCD.

First autor (Year); design	Participants	Intervention	Outcomes (assessment tool)	Results
Chia-Liang Tsai (2009); comparative	Sample size: 57 children Completed the program: Not specified Dropouts and cause: Not specified TTG: n=14 children with DCD Mean age ± SD: 114.38 ± 4.37 months Weight: 30.68 ± 8.71 kg Height: 132.86 ± 11.64 cm BMI: 17.11 ± 2.87 kg/m^2 CG1: n=14 children with DCD Mean age ± SD: 113.64 ± 3.48 months CG2: n=29 typical development children Mean age ± SD: Not specified	Duration: 10 weeks Frequency: 3 sessions/week Session duration: 50 minutes TTG: TT program with the following structure: warm-up, TT training, TT with a partner, and cool-down. The program increases in technical difficulty as the weeks progress. CG1: Performed usual physical education activities and does not engage in any new sports outside of school. CG2: Performed usual physical education activities and does not engage in any new sports outside of school.	Motor skills: - Movement Assessment Battery for Children-2 Behavioral inhibition capacity: - Endogenous model of visuospatial attention	**Intragroup:** -TTG improved motor skills (p=0.002) -Improvement in the inhibitory control strength difference in the TTG group (p=0.005) -Reaction time improved in all 3 groups **Intergroup:** -TTG and CG1 performed worse than CG2 in the motor skills test (p=0.01) (p<0.001) -TTG performed better than CG1 in the motor skills test (p=0.002) -CG1 has worse behavioral inhibition capacity than TTG and CG2 -TTG and CG1 have worse reaction times than CG2
Yu-Ting Tseng (2023); comparative	Sample size: 20 children with probable DCD Completed the program: 20 Dropouts and cause: 0 TTG: n=10 (3 boys and 7 girls) Mean age ± SD: 9.50 ± 0.70 All right-handed CG1: n=10 (3 boys and 7 girls) Mean age ± SD: 9.2 ± 0.42 All right-handed	Duration: 12 weeks Frequency: 3 sessions/week Session duration: 40 minutes TTG: TT program with the following structure: warm-up, TT training, and cool-down. The goal of the program was to improve haptic function and upper limb motor skills. The TT training includes: balancing with the ball, wall hits, shadow swings, serves, forehand hits, and comprehensive practice. CG1: Continue with their daily life, refraining from racket sports and playing musical instruments.	Haptic function: - Haptic system Motor skills: - Movement Assessment Battery for Children-2	**Intragroup:** -Improvement in haptic sensitivity in the TTG -Improvement in haptic detection threshold in the TTG -Improvement in the aiming and catching time (AC in the MABC-2 test) in the TTG -Improvement in the manual dexterity time (MD in the MABC-2 test) in the TTG -Improvement in the manual dexterity time (MD in the MABC-2 test) in the CG1 **Intergroup:** None
Dongmin Kim (2024); comparative	Sample size: 31 children with DCD Completed the program: 31 Dropouts and cause: 0. TTG:	Duration: 8 weeks Frequency: 3 sessions/week Session duration: 90 minutes TTG: TT program structured in: warm-up,	Visual Perception: - Korean Developmental Test of Visual Perception-Adolescent Motor Skill:	Intragroup: -Improvement of TTG in the K-DTVP-A test (p<0.001) -Improvement of TTG in the BOTMP-2 test on motor skill development (p<0.001)

	n=16 (14 boys and 2 girls) Mean age ± SD: 13.75 ± 1.07 Weight: 76.03 ± 17.43 kg Height: 167.39 ± 7.20 cm DCDQ-K: 33.42 ± 8.05 BOTMP-2: 7.82% ± 3.30 CG1: n=15 (12 boys and 3 girls) Mean age ± SD: 13.73 ± 1.03 y Weight: 64.83 ± 15.14 kg Height: 166.60 ± 5.22 cm DCDQ-K: 34.52 ± 9.04 BOTMP-2: 9.02% ± 3.17	skill training (serve, hit, reception), match, and cool-down. This program also introduces a task-oriented approach methodology to facilitate learning and improvement in children. This methodology has been previously validated and works with children with DCD. CG1: Does not participate in the TT intervention. No other conditions.	- Bruininks-Oseretsky Test of Motor Proficiency-2 - Developmental Coordination Disorder Questionnaire	Intergroup: -Greater improvement of TTG in the K-DTVP-A test compared to CG1 -Greater improvement of TTG in the BOTMP-2 test on motor skill development compared to CG1

BMI: body mass index; CG: control group; SD: standard deviation; TTG: table tennis group

Supplementary Table S3. General characteristics of studies in children with Intellectual Disabilities.

First autor (Year); design	Participants	Intervention	Outcomes (assessment tool)	Results
Ming-De Chen (2015); comparative	Sample size: 135 children Completed the program: 132 Dropouts and cause: 3. Not specified TTG: n=45 (24 boys and 21 girls) (22 with mild intellectual disability and 23 borderline) Mean age ± standard deviation: 10.60 ± 3.60 y Weight: 47.20 ± 10.20 kg CG1: n=46 (26 boys and 20 girls) (22 with mild intellectual disability and 24 borderline) Mean age ± standard deviation: 10.90 ± 3.90 Weight: 46.80 ± 9.90 kg CG2: n=41 (23 boys and 18 girls) (20 with mild intellectual disability and 21 borderline) Mean age ± standard deviation: 10.70 ± 4.00 y Weight: 48.20 ± 9.30 kg	Duration: 16 weeks Frequency: 3 sessions/week Session duration: 60 minutes TTG: TT program with 4 main components: serves, forehand hits, backhand hits, and continuous hits with 50 balls at different speeds. The sessions will increase in difficulty and intensity as the weeks progress. CG1: Standard occupational therapy program including neurodevelopmental, perceptual-motor, and sensory integration treatment approaches CG2: No change in lifestyle.	Visual Perception: - Test of Visual Perceptual Skill–third edition Executive Function: - Stroop Color-Word - Wisconsin Card-Sorting Test 64-card version	Intragroup: -TTG improved in 7 of the 8 items of the TVPS-3 test, 4 of the 6 items of the WCST-64, and 2 of the 3 items of the Stroop test (Cohen's d-value > 0.80) -CG1 improved in 7 of the 8 items of the TVPS-3 test, 4 of the 6 items of the WCST-64, and 2 of the 3 items of the Stroop test (Cohen's d-value > 0.50) Intergroup: -TTG and CG1 outperformed CG2 in all tests -TTG outperformed CG1 in the subtests of: spatial relations, form constancy, sequential memory, and figure-ground -In the WCST-64, TTG performed better in all subtests than CG1 -TTG performed better than CG1 in the Stroop color and Color-Word tests
Amir Hamzeh Sabzi (2023); comparative	Sample size: 30 girls with intellectual disabilities aged between 9-15 years Completed the program: 30 Dropouts and cause: 0 TTG: n=15 Mean age ± standard deviation: Not specified CG1: n=15 Mean age ± standard deviation: Not specified	Duration: 8 weeks Frequency: 3 sessions/week Session duration: 60 minutes TTG: TT program structured in: warm-up, skill training, group games, and cool-down. The technical skills learned advanced in difficulty as the weeks progressed. CG1: They do not engage in any activity beyond their usual daily routine.	Working Memory: - Daneman and Carpenter's Working Memory Test	Intragroup: -Improvement in working memory in TTG ($p<0.001$) Intergroup: -The improvement in working memory in TTG was greater than in CG1

BMI: body mass index; CG: control group; SD: standard deviation; TTG: table tennis group.

Supplementary Table S4. General characteristics of the study in children with ASD.

First autor (Year); design	Participants	Intervention	Outcomes (assessment tool)	Results
Chien-Yu Pan (2017); comparative	Sample size: 22 children Completed the program: 22 Dropouts and cause: 0 TTG: n=11 children (6 with autism and 5 with Asperger syndrome) (3 of them also with ADHD) Mean age ± SD: 9.68 ± 1.61 Height: 137.88 ± 12.25 cm Weight: 35.93 ± 11.45 BMI: 18.56 ± 3.73 kg/m^2 ABCT score: 13.45 ± 6.39 SRS-2 score: 113.82 ± 19.34 TTG2: n=11 children (6 with autism and 5 with Asperger syndrome) (3 of them also with ADHD) Mean age ± SD: 8.49 ± 1.76 Height: 134.55 ± 12.99 cm Weight: 32.00 ± 12.47 BMI: 17.02 ± 3.66 kg/m^2 ABCT score: 14.09 ± 7.23 SRS-2 score: 111.64 ± 19.33	Duration: 12 weeks Frequency: 2 sessions/week Session duration: 70 minutes All sessions will be structured as: Warm-up, motor skills, executive function motor skills, group games, and cool-down. During the first 4 weeks, basic exercises with TT balls will be performed, and in the following 8 weeks, more complex exercises and games will be added. TTG1: Performed the intervention and subsequently acts as GC. TTG2: Starts as GC and subsequently performs the intervention.K.	Motor skills: - Bruininks–Oseretsky Test of Motor Proficiency-2 Executive functions: - Wisconsin Card Sorting Test	Intragroup: -Improvement in manual coordination (BOT-2) in TTG1 (+9.73) ($p<0.01$) -Improvement in general coordination (BOT-2) in TTG1 (+10.00) ($p<0.01$) -Improvement in strength and agility (BOT-2) in TTG1 (+13.27) ($p<0.01$) -Improvement in total motor composite (BOT-2) in TTG1 (+10.36) ($p<0.01$) -Improvement in manual coordination (BOT-2) in TTG2 (+5.91) ($p<0.01$) -Improvement in general coordination (BOT-2) in TTG2 (+7.73) ($p<0.01$) -Improvement in strength and agility (BOT-2) in TTG2 (+9.27) ($p<0.01$) -Improvement in total motor composite (BOT-2) in TTG2 (+11.73) ($p<0.01$) -Improvement in the total number of correct responses (WCST) in TTG1 (+9.09) ($p<0.01$) -Improvement in conceptual level response (WCST) in TTG1 (+21.18) ($p<0.01$) -Decrease in perseverative response (WCST) in TTG1 (-10.64) ($p<0.01$) -Improvement in the total number of correct responses (WCST) in TTG2 (+5.91) ($p<0.01$) -Improvement in conceptual level response (WCST) in TTG2 (+12.09) ($p<0.01$) Intergroup: -TTG1 had a longer residual effect than TTG2

BMI: body mass index; CG: control group; SD: standard deviation; TTG: table tennis group.

Supplementary Table S5. General characteristics of studies with typicall development children.

First autor (Year); design	Participants	Intervention	Outcomes (assessment tool)	Results
Ying Gu (2021); paired randomized	Sample size: 104 children Completed the program: 104 Dropouts and cause: 0 TTG: n=52 (25 boys and 27 girls) Mean age ± SD: 55.190 ± 8.702 Height: 107.171 ± 7.649 cm Weight: 17.504 ± 3.432 CG1: n=52 (25 boys and 27 girls) Mean age ± SD: 55.190 ± 8.997 Height: 107.235 ± 7.717 cm Weight: 17.529 ± 2.845	Duration: 12 weeks Frequency: 3 times per week Session duration: 50 minutes TTG: TT program that progresses through the following phases over the weeks: getting to know the ball, feeling the ball, imitation, technical strokes, and relaxation. In these phases, participants will be introduced to TT and will end up learning the technical strokes. CG1: Participated in the usual physical education classes mandated by the State (China).	Gross motor skills: - Test of Gross Motor Development-2	Children: Intragroup: -Improvement in gross motor skills in the TTG ($p<0.001$) -Improvement in locomotion subtest in TTG ($p<0.01$) -Improvement in object manipulation subtest in TTG ($p<0.01$) Girls: Intragroup: -Improvement in gross motor skills in TTG ($p<0.001$) TTG improvement in locomotion subtest compared to CG1 ($p<0.001$) -Improvement in object manipulation subtest in TTG ($p<0.001$) Boys/Girls Integroup: -TTG improves gross motor skills compared to CG1 ($p<0.05$) -TTG improves in locomotion subtest compared to CG1 ($p<0.05$) -TTG improves in object manipulation subtest compared to CG1 ($p<0.05$)
Olcay Salici (2020); non-controlled	Sample size: 11 children (8 boys and 3 girls) Completed the program: 11 Dropouts: 0 TTG: n=11 Mean age ± SD: 9.82 ± 2.23	Duration: 6 weeks Frequency: 2 times per week Session duration: Not specified TTG: TT program in which the basic forehand and backhand rally techniques are taught, with the goal of achieving the maximum number of exchanges without errors.	Attention Capacity: - Bourdon Attention Test	Improvement in the attention test in the number of marked letters ($p<0.05$)
Daniel V. Chagas (2018); comparative	Sample size: 31 children Completed the program: 31 Dropout and reason: 0	Duration: 1 year Frequency: 3-5 times per week Session duration: 30-40 minutes	Coordination Capacity: - Körperkoordinationstest für Kinder (KTK)	Intragroup: -Improvement in motor coordination values (KTK) in TTG ($p<0.0001$) -Improvement in motor coordination values (KTK) in

	TTG: n=17 (11 boys and 6 girls) Mean age ± SD: 13.30 ± 0.50 years Weight: 43.00 ± 8.7 kg Height: 1.55 ± 0.10 m CG1: 17 (6 boys and 11 girls) Mean age ± SD: 13.00 ± 0.40 years Weight: 52.50 ± 16.10 kg Height: 1.57 ± 0.1 m	Between the sixth and seventh month, there was a 45-day break where TTG did not practice TT since it was practiced at school. TTG: Recreational TT program that was unstructured and based on play (matches) CG1: Participated in regular physical education classes and does not start any sport.		CG1 ($p<0.0001$) Intergroup: -The TTG group shows greater improvement in coordination levels (KTK) compared to CG1 ($p=0.01$)

BMI: body mass index; CG: control group; SD: standard deviation; TTG: table tennis group.