

The Effect of Group Psychomotor Therapy on Motor and Social Competence in Children 4-5 Years of Age

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Abstract

Group Psychomotor Therapy (GPT) is prescribed for children with behavioral problems. The purpose of the study was to examine the effect of a GPT, on motor competence (MC) and social competence (SC) of children 4-5 years old. In the survey participated 58 children aged 47-59 months, attending private kindergartens “Mistiko Kleidi” and “Molyvada”, located in Ioannina, Epirus, Greece. The sample was assigned to the Experimental Group (EG) who participated in the GPT program and Control Group (CG) who did not participate in any intervention program. Children’s MC was measured with the 10-items Democritus Motor Screening Tool for Preschool Children (DEMOST-PRE) and SC was measured with the 23-items Psychosocial Test Adjustment (PTA), which includes 23 questions. According to the results, children of the EG presented higher improvement on motor and social competence compared to those of the CG. The results confirm that GPT affects not only the child’s motor profile but also the social competence.

Key words: *Group Psychomotor Therapy, Psychosocial Test Adjustment, social competence, pre-school age*

1. Introduction

In Greece the last 20 years, the Group Psychomotor Therapy (GPT) has been effective in young children on motor competence (MC) (Moschos, Grivas, Kouli, & Kambas, 2021; Zimmer, Christoforidis, Xanthi, Aggeloussis, & Kambas, 2008), on visual-motor control of young children (Kambas, Fatouros, Christoforidis, Venetsanou, Papageorgiou, Giannakidou, & Aggeloussis, 2010), in children with different cultural backgrounds (Kouli, Avloniti, Venetsanou, Giannakidou, Gazi, & Kambas, 2010) and in children with intellectual disability on school behavior (Fotiadou, Neofotistou, Dampa, & Giagazoglou, 2020).

The GPT is an experience-oriented and exclusively focuses on group dynamics (Foulds & Hannigan, 1974). Moreover, the GPT is a version close the Psychomotor therapy (PMT), which interfaces with other approaches as exercise and dance movement therapy. It can also be integrated into different psychological approaches. In action-oriented PMT, the emphasis lies on the action, the development of mental and physical proficiencies and the supporting of a person’s development (Probst, Knäpen, Poot, & Vancampfort, 2010).

The aims of the group in GPT are to lead its members to (a) develop a sense of independence and responsibility for both themselves and other members, and (b) acquire social skills and awareness of their choices. Additional co-goals are (a) the expansion of motor repertoire and the development of motor skills, mainly for the enhancement of children’s self-esteem, (b) trust among members, (c) the enhancement of awareness about peers’ needs and feelings, (d) the promotion of self-awareness, and (e) the development of self-respect and self-acceptance (Kambas & Venetsanou, 2021).

Motor development is an internal or innate process driven by a biological or genetic time clock, the environment may speed or slow the process of change (Haywood & Getchell, 2020). Children discover qualitatively different movement patterns that improve the outcome of their skill performance (Jensen 2005; Jensen & Korff, 2005).

As they grow mature physiologically and gain experience, other movement patterns become possible that allow them to execute skills with greater proficiency (Gagen & Getchell, 2008, 2018).

Behavior problems are interpreted as a continuation of motor disorders and as the child's ability to adapt to the requirements of the environment. PMT is defined as a treatment that use the body and physical activities to solve problems (Bellemans, Didden, Visser, Schaafsma, Totsika, & Busschbach, 2018).

Society and culture can have a profound effect on an individual's movement behaviors, particularly in the area of sport and physical activity (Clark, 1995). Sociocultural elements such as religion, gender and national origin can direct one's future movement behavior (Lindquist, Reynolds, & Goran, 1998).

The preschool period is a particularly important time for the development of social skills (Corsario, 1985). It is at this time when children begin to expand their social interactions beyond their parents and take on the developmental task of building relationships and acceptance with their peers (Denham & Burton, 2003; Denham & Holt, 1993; Howes, 1987). A family has a major influence in the process of socialization into physical activities as well as other pursuits, in part because the family's influence begins so early in a child's life (Kelly, 1974; Pargman, 1997; Snyder & Speitzer, 1973, 1978).

Moreover, the family may be the only source of social interaction that an infant has and the primary source of social constraints (Weiss & Barber, 1996). An individual's early socialization in sport and physical activities is a key factor in motor development and the likelihood of later participation. Participating in physical activities may influence the behavioral patterns of participants (Haywood & Getchell, 2020).

The purpose of the current research was to study the effect of a GPT, emphasizing on MC and social competence (SC) of children 4-5 years of age.

2. Method

2.1 Participants

Fifty eight children aged between 47-59 months participated in the study, from private kindergarten "Mistiko Kleidi" and "Molyvada", located in Ioannina, Epirus, Greece. None of them had showed any evidence for developmental delays, without any diagnosed neurological, sensory or motor problems. Children from the kindergarten "Mystiko Kleidi" are the Experimental Group (EG) and from the kindergarten "Molyvada" are the Control Group (CG) of the 2021- 2022 school year. All the participants were required to bring a consent form written and signed by their parents prior to their participation in the study.

2.2 Measurements

Children's MC was measured with the Democritus Motor Screening Tool for Preschool Children (DEMOST-PRE) (Kambas, Venetsanou, & Gavriilidou, 2019) is one battery test and it measures important skills of MC. The DEMOST-PRE consists of the following 10 items: *Dots on paper, Bounces right-left, Transferring balls, Backward balance, Throwing by hand, Transferring coins, Walking through the hoops, Catching bags and Jump over obstacle* that are grouped into 3 subjects fine, gross, and perceptual-motor activities (Appendix 1). The bundle in addition to the total score and the score of each item derived from norms tables, provides the possibility of categorizing performance into 3 categories: it is necessary to improvement, average and above average. The administration of the battery takes approximately 15-20 minutes.

In addition to the overall score and the standard score derived from norm tables, the bundle provides the possibility to categorize performance into 3 categories: needs improvement, average and above average. Criterion validity was tested and the internal consistency indices of the short form of the bundle are high (0.80), while the reliability with Cronbach's Alpha test calculated at $\alpha=.873$. The beam shows accuracy and stability. It has very good structural validity and good criterion validity resulting from comparison of the results of the bundle with other already valid bundles.

SC was measured by the subscale of the Psychosocial Test Adjustment (PTA) (Chatzichristou, Polychronis, Bezevegis, & Mylonas, 2008), comprising 23 questions, categorized in the dimensions: leadership skills, interpersonal communication and cooperation with peers.

The PTA is divided into 4 categories and its dimensions. It has questions that assess: social competence, school competence, emotional competence and behavioral problems. The questionnaire has a 5-point Likert scale wherein "never=1" and "too much=5".

The Cronbach's α index was found for social competence equal to $\alpha=0.94$, for school competence equal to $\alpha=0.98$, for emotional competence equal to $\alpha=0.91$ and for behavioral problems equal to $\alpha=0.93$.

2.3 Procedures

Measurements were taken place indoors in kindergartens. The first measurement was carried out during the same period in both kindergartens of Ioannina, in the last week of September 2021, while the second measurement was carried out during the same period in both kindergartens of Ioannina, in the first week of June 2022. Kindergartens teachers answered the PTA-questions, while the DEMOST-PRE was administered from a trained evaluator.

2.4 Group Psychomotor Therapy

GPT design is based on individual developmental characteristics of each participant (Zimmer & Cicurs, 1993; Zimmer, 2019) and follows six principles: 1) participation is a personal decision; 2) stimuli for action are provided by children; 3) only few necessary rules are adopted; 4) self-action is promoted, whereas evaluative feedback on participants' performance is avoided; 5) limits are set in agreement with children; 6) "bridges" are employed in order to approach situations/children (Zimmer, 2006). The objectives of each therapy session in the GPT are based on the three categories of experiences identified by Zimmer (2006): body experiences, social experiences, and material experiences that promote the personal competence, SC, material competence (Hanne-Behnke, 2001).

The children of the EG attended 45 minutes GPT sessions, 3 days a week for 8 months, while children of the CG did not participate in any extracurricular program. GPT involved 96 sessions for a total period of eight months. Each session, lasted approximately 45 minutes, consisted of the awakening part (aiming to connecting members of the group), the therapeutic core (including physical activities aiming at not only the development of children's motor skills but also at cognitive and socio-emotional aspects of their behavior are include) and the relaxation rituals (consists relaxing activities).

2.5 Statistical Analysis

A two-way analysis of variance (ANOVA) for repeated measurements was employed for the statistical treatment of the data. The factorial model was 2×2 (2 groups x 2 measurements). Post-hoc comparisons were made with the Sidak test and the level of significance was set at $\alpha=.001$.

3. Results

The results showed a statistically significant interaction between the "measurement" and the "group" factors, for the scores of MC of the items: Dots on paper ($F_{1,56}=76.73$, $p<.001$), Bounces right-left ($F_{1,56}=152.49$, $p<.001$), Transferring balls ($F_{1,56}=41.61$, $p<.001$), Backward balance ($F_{1,56}=293.20$, $p<.001$), Throwing by hand ($F_{1,56}=58.36$, $p<.001$), Transferring coins ($F_{1,56}=114.65$, $p<.001$), Walking through the hoops ($F_{1,56}=75.73$, $p<.001$), Catching bags ($F_{1,56}=58.36$, $p<.001$) and Jump over obstacle ($F_{1,56}=68.96$, $p<.001$). On the contrary, for the children of the CG, no statistically significant differences were observed between the pre and post measurements, in the scores of the items (Table 1).

Table 1. Means and standard deviations of the children's pre- and post-measurement scores.

Test item	Experimental Group				Control Group			
	pre		post		pre		post	
	M	SD	M	SD	M	SD	M	SD
<i>Dots on paper</i>	26.90	10.42	53.63	7.10	26.29	10.26	29.40	12.52
<i>Bounces right-left</i>	3.10	1.13	9.37	2.22	3.04	1.26	3.54	1.29
<i>Transferring balls</i>	17.53	1.74	13.00	2.78	17.58	1.81	17.35	1.47
<i>Backward balance</i>	2.37	1.35	11.27	2.48	2.61	1.20	2.75	0.89
<i>Throwing by hand</i>	1.61	1.30	7.07	1.39	1.54	1.23	1.72	1.24
<i>Transferring coins</i>	10.83	6.96	28.03	4.42	11.39	3.82	12.92	2.59
<i>Walking through the hoops</i>	0.60	0.67	2.57	0.90	0.57	0.63	0.61	0.63
<i>Catching bags</i>	1.10	0.80	3.20	0.92	1.18	0.82	1.40	0.63
<i>Jump over obstacle</i>	1.13	1.55	4.53	1.28	1.68	1.06	1.72	0.94

Additionally, improvement in the EG after the GPT was found for the total factor of SC ($F_{1,56}=12.89$, $p<.001$) and for leadership skills ($F_{1,56}=16.21$, $p<.001$), for interpersonal communication ($F_{1,56}=17.89$, $p<.001$), and for cooperation with peers ($F_{1,56}=15.99$, $p<.001$), while in the CG, the scores remained at the same levels (Table 2).

Table 2. Means and standard deviations of the children's pre- and post-measurement scores.

Test item	Experimental Group				Control Group			
	pre		post		pre		post	
	M	SD	M	SD	M	SD	M	SD
<i>Social competence</i>	46.37	9.88	55.77	9.01	46.25	6.50	46.68	8.99
<i>Leadership skills</i>	48.73	10.77	56.85	10.32	47.50	9.57	47.82	9.51
<i>Interpersonal communication</i>	46.60	10.39	54.77	11.19	45.79	8.51	46.11	9.12
<i>Cooperation with peers</i>	48.93	8.74	56.03	10.11	48.40	9.23	47.97	9.12

4. Discussion

The aim of the present study was to examine a GPT effect on MC and SC of children 4-5 years of age. Pre- and post-measurements were administered to all participants, the results showed that the children of EG improved statistically significant their MC and SC. On the contrary, for the children who did not follow GPT, no statistically significant differences were observed between the pre and post measurements, in the scores of the items.

It was revealed that the EG showed a significant statically improvement in the post test, while the CG did not. Moreover, current findings are similar with relevant research projects that studied the impact of GPT on young children's fine and gross motor performance (Kambas, Amoutzas, Makri, Gourgoulis, & Antoniou, 2002; Moschos et al., 2021; Ponce, Fernández, & Hernández, 2011; Ruploh, Martzy, Bischoff, Matschulat, & Zimmer, 2013; Trouli, 2008; Zimmer et al., 2008). Trouli (2008) revealed that preschool children who participated GPT had better performance in understanding time concepts, awareness of body and space.

Relative research has also proved that the use of GPT during early childhood effect the development of motor competence not only in children of the typical developing children but also in children of low level of motor abilities (Spanaki, Skordilis, & Venetsanou, 2010) poor socio-economic status (Campos, Silva, Pereira, Rocha, & Tudella, 2008), developmental disorders (Il-Myeong, Sung-Jin, Woong-Soo, Hong-Joong, & Sung-Woon, 2013), Autism Spectrum Disorder (Afshari, 2012; ElGarhy & Liu, 2016; Park, Jeong, & Borneman, 2011; cultural differences (Kouli et al., 2010) and in children with intellectual disability (Fotiadou et al., 2020).

Additionally, the results showed that the SC of EG was statistically significant for the total factor but also for leadership skills, for interpersonal communication and for cooperation with peers, while in the CG, the scores remained at the same levels. The results of previous studies that have examined the changes in children's socio-personal skill (Cro & Pinho) and SC (Grivas, Moschos, Kambas, Kouli, & Bekiari, 2019) after the implementation of GPT, confirm that statistically significant changes can occur in children's affective skills and attitudes, provided that pedagogically appropriate approaches, as the one of the present study, are used in practice.

Cro and Pinho (2016) concluded that any children who participate in the program improve their skills such as resilience and have positive results and create socio-personal skills with other children compared to those who do not participate. Children increased levels of cognitive, social development and improving the well-being of preschool children (Cro & Pinho, 2016). Early childhood education emphasizes the importance of motor skill development towards children's lifetime participation in sport and physical activity (Certain & Kahn, 2002; Stodden, Goodway, Langendorfer, Robertson, Rudisill, Garcia, & Garcia, 2008; Venetsanou, Kambas & Giannakidou, 2015). GPT has an important role in the development of pre-school children age and is necessary for the educational process at this age (Fagaras, Rus, & Vanvu, 2014). The progress of motor, intellectual, social and emotional skills in pre-school age is linked to GPT (Lupu, 2010; Teresa & Castella, 2016).

Individuals consisting of multiple developmental systems: motor, social, cognitive, and perceptual. These developmental systems are interwind. Perception and cognition are required to carry out actions, while actions generate perceptions, provide knowledge, and promote social interaction (Adolph & Franchak, 2017). Movement through the environment is vital for the coupling of perceptions and purposeful movements in the environment (Haywood & Getchell, 2020). According to Moschos & Pollatou (2022), the GPT has a positive impact on child development except from the motor domain but also in other domains like school, social and emotional competence as well.

In conclusion, this study confirmed that the implementation of GPT within preschool curricula, affects not only the improvement of children's motor profile but also social behavior. It seems important for the preschool educators to know that the GPT contributes also to the development of concepts essential for the school readiness.

It is important to include GPT in the prescription-procedure within the Greek Health System, to provide additional support in traditional methods and treatments.

References

- Adolph, K. E., & Franckak, J. M. (2017). The development of motor behavior. *WIREs Cognitive Science*, 8, e1430.
- Afshari, J. (2012). The effect of perceptual-motor training on attention in the children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 6, 1331–1336.
- Bellemans, T., Didden, R., Visser, R., Schaafsma, D., Totsika, V., & Busschbach, J.T. (2018). Psychomotor therapy for anger and aggression in mild intellectual disability or borderline intellectual functioning: an Intervention Mapping approach, *Body, Movement and Dance in Psychotherapy*, 1-16.
- Campos, A. C. D., Silva, L. H., Pereira, K., Rocha, N. A. C. F., & Tudella, E. (2008). Psychomotor intervention on children of low socioeconomic status. *Fisioterapia e Pesquisa*, 15(2), 188-193.
- Certain, L. K., & Kahn, R. S. (2002). Prevalence, correlates, and trajectory of television viewing among infants and toddlers. *Pediatrics*, 109(4), 634-642.
- Chatzichristou, Ch., Polychronis, F., Bezevegis, H., & Mylonas, K. (2008). Psychosocial Test Adjustment for preschool and school-age children. National and Kapodistrian University of Athens: Department of Psychology, Department of Psychology.
- Clark, J. E. (1995). On becoming skillful: Patterns and constraints. *Research Quarterly for Exercise and Sport*, 66, 173-179.
- Cro, M. L., & Pinho, A. M. C. (2016). Resilience and psychomotricity: inclusion strategies in preschool education, *Arena: Journal of Physical Activities*, 5, 90-109.
- Corsario, W. A. (1985). Friendship and peer culture in the early years. Norwood, NJ: Ablex.
- Denham, S. A., & Burton, R. (2003). Social and emotional prevention and intervention programming for preschoolers. New York: Kluwer Plenum.
- Denham, S. A., & Holt, R. W. (1993). Preschoolers' likeability as a cause or consequence of their social behavior. *Developmental Psychology*, 29, 271–275.
- ElGarhy, S., & Liu, T. (2016). Effects of psychomotor program on students with autism spectrum disorder. *American Psychological Association*, 31(4), 491-506.
- Fagaras, P. S., Rus, C. M., & Vanvu, G. (2014). The Importance of Psychomotricity in Developing of Perceptual – Motor Structures, *Procedia - Social and Behavioral Sciences*, 149, 317–320.
- Foulds, M., L. & Hannigan, P., S. (1974). Effects of psychomotor group Therapy on ratings of self and others. *Psychotherapy: theory, Research and Practice*, 11, 4, 351-353.
- Fotiadou, E., Neofotistou, K., Dampa, A., & Giagazoglou, P. (2020). The effect of a Psychomotor education program on school behavior of children with intellectual disability. *International Journal of Innovation and Research in Educational Sciences*, 7(6), 520-526.
- Gagen, L., & Getchell, N. (2008). Applying Nektons' apple to elementary physical education: An interdisciplinary approach. *Journal of Physical Education, Recreation, and Dance*, 79, 43-51.
- Gagen, L., & Getchell, N. (2018). Using “constraints” to design developmentally appropriate movement activities for early childhood education. In H. Brewer & M. Ranck Jalongo (Eds.), *Physical activity and health promotion in the early years: Effective strategies for early childhood educators* (pp.57-74). New York, NY: Springer.
- Grivas, V., Moschos, G., Kambas, A., Kouli, O., & Bekiari, A. (2019). The effect of psychomotor intervention on social competence of children 4-5 years of age. *Proceedings of the 27th International Congress of Physical Education & Sport*. Komotini. Democritus University of Thrace.
- Haywood, K. M., & Getchell, N. (2020). *Life Span Motor Development* (7th ed.). Human Kinetics: Champaign, IL, USA.
- Hanne-Behnke, G. (2001). *Klinisch Orientierte Psychomotorik*. Muenchen-Bad Kissingen Berlin-Duesseldorf-Heidelberg: Richard Pflaum Ver.
- Howes, C. (1987). Peer interaction of young children. *Monographs of the Society for Research in Child Development*, 53 (Serial No. 217).
- Il-Myeong, K., Sung-Jin, K., Woong-Soo, K., Hong-Joong, C., & Sung-Woon, K. (2013). Effect of psychomotor physical activity program on the coordination of children with developmental delays. *Journal of Convergence Information Technology*, 8(13), 523.
- Jensen, J. (2005). The puzzles of motor development: How the study of developmental biomechanics contributes to the puzzle solutions. *Infant and Child Development*, 14(5), 501-511.

- Jensen, J., & Korff, T. (2005). Continuing the discourse on the contribution of biomechanics to understanding motor development: Response to the commentaries. *Infant and Child Development*, 14, 529-533.
- Kambas, A., Amoutzas, K., Makri, H., Gourgoulis, V. & Antoniou, P. (2002). The effect of psychomotor education emphasizing in time and space, on the development of graphomotor skills in preschoolers. *Exercise and Society*, 32, 49-57.
- Kambas, A., Fatouros, Y., Christoforidis, C., Venetsanou, F., Papageorgiou, P., Giannakidou, D., & Aggeloussis, N. (2010). The effects of Psychomotor Intervention, on Visual-Motor Control as a Graphomotor aspect in preschool age. *European Psychomotricity Journal*, 3(1), 54-61.
- Kambas, A., Venetsanou, F. & Gavriilidou Z. (2019). *Fisiki Drasthriotita & Psixokinhtikh sthn proxolikh hlikia*, Athens: Gutenberg.
- Kambas, A., & Venetsanou F. (2021). "Group Psychomotor Therapy" in children. *European Psychomotricity Journal*, 14, 1-4.
- Kelly, J. R. (1974). Socialization toward leisure: A developmental approach. *Journal of Leisure Research*, 6, 181-193.
- Kouli, O., Avloniti, A., Venetsanou, F., Giannakidou, D., Gazi, S., & Kambas, A. (2010). The effect of a psychomotor training program on the motor proficiency of preschool children in a multicultural environment. *European Psychomotricity Journal*, 3 (1),31-36.
- Lindquist, C., Reynolds, K., & Goran, M. (1998). Sociocultural determinants of physical activity among children. *Preventive Medicine*, 29, 305-312.
- Lupu, E. (2010). The Role of Motric Activities in the Psycho-motric Development of Preschool Children – Future Pupils, *Procedia Social and Behavioral Sciences*, 12, 457–464.
- Moschos, G., Grivas, V., Kouli, O., & Kambas, A. (2021). The effect of a psychomotor intervention program on motor competence and behavior problems of children 4-5 years of age. *Proceedings of the 5th International Motor Development Research Consortium*. Komotini. Democritus University of Thrace.
- Moschos, G., & Pollatou, E. (2022). The effect of Psychomotor Intervention Program in children 3-10 years of age: a systematic review. *Body, Movement and Dance in Psychotherapy*, 17(4),294-309.
- Pargman, D. (1997). *Understanding sport behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Park, W., Jeong, Y., & Borneman, J. (2011). The effect of psycho-motor play on motor and body perception competence for young children with developmental delays. *South African Journal of Occupational Therapy*, 41, 13–18
- Ponce, R. R., Fernández, D. A. G., & Hernández, N. C. (2011). Intervención psicomotriz en el área personal/social de un grupo de educación preescolar/Psychomotor intervention on social/personal area of a group of children of pre-school education. *Revista Complutense de Educación*, 22(2), 195.
- Probst, M., Knapen, J., Poot, G., Vancampfort, D. (2010). Psychomotor Therapy and Psychiatry: What's in a name? *The Open Complementary Medicine Journal*, 2, 105-113.
- Ruploh, B., Martzy, F., Bischoff, A., Matschulat, N., & Zimmer, R. (2013). Veränderungen im Selbstkonzept nach psychomotorischer Förderung. *Motorik*, 36, 180–189.
- Snyder, E. E., & Speitzer, E. (1973). Family influences and involvement in sports. *Research Quarterly*, 44, 249-255.
- Snyder, E. E., & Speitzer, E. (1978). Socialization comparisons of adolescent female athletes and musicians. *Research Quarterly*, 79, 342-350.
- Spanaki, E., Skordilis, E., & Venetsanou, F. (2010). The effect of a psychomotor program on the motor proficiency of early elementary school children. *Inquiries in Sport & Physical Education*, 8(2), 132 – 141.
- Stodden, D. F., Goodway, J. D., Langendorfer, S. J., Robertson, M. A., Rudisill, M. E., Garcia, C., & Garcia, L. E. (2008). A Developmental on the role of motor skill competence in physical activity: An emergent relationship. *Quest*, 60(2), 290-306.
- Teresa, M.M., & Castella, J. (2016). Can Psychomotricity improve cognitive abilities in infants? *Aloma*, 34 (1), 65-70.
- Trouli, K. (2008). Psychomotor education in preschool years: An experimental research. *European Psychomotricity Journal*, 1, 23–27.
- Venetsanou, F., Kambas, A., & Giannakidou, D. (2015). Organized physical activity and health in preschool age: a review. *Central European Journal of Public Health*, 23(3), 200.
- Weiss, M. R., & Barber, H. (1996). Socialization influences of collegiate male athletes: A tale of two decades. *Sex Role*, 33, 129-140.
- Zimmer, R. (2019). *Handbuch Psychomotorik. Theorie und Praxis der psychomotorischen Förderung von Kindern*. Freiburg: Verlag Herder.
- Zimmer, R., Christoforidis, C., Xanthi, P., Aggeloussis, N., & Kambas, A. (2008). The effects of a psychomotor training program on motor proficiency of Greek preschoolers. *European Psychomotricity Journal*, 1(2), 3-9.

- Zimmer, R. (2006). Handbuch der Psychomotorik: Theorie und Praxis der psychomotorischen Förderung von Kindern. Freiburg: Herber.
- Zimmer, R. & Cicurs, H. (1993). Psychomotorik: neue Ansätze im Sportförder-unterricht und Sonderturnen. Schorndorf: Hofmann Verlag.

Appendix 1. Evaluation sheet “DEMOST-PRE”

«ΔΕΚΑ» (Καμνός, Βενεσιόπουλος, Γαβριηλίδου, 2018)

Φύλλο καταγραφής επίδοσης

«Δ.Ε.Κ.Α-ΠΡΟ»

«ΔΗΜΟΚΡΙΤΟΣ»: ΕΡΓΑΛΕΙΟ ΚΙΝΗΤΙΚΗΣ ΑΝΙΧΝΕΥΣΗΣ ΓΙΑ ΠΑΙΔΙΑ ΠΡΟΣΧΟΛΙΚΗΣ ΗΛΙΚΙΑΣ

ΟΝΟΜΑΤΥΜΟ:			ΕΤΟΣ	ΜΗΝΑΣ	ΗΜΕΡΑ
ΦΥΛΟ:	ΑΡ	ΘΥ	ΗΜΕΡ.ΜΕΤΡΗΣΗΣ		
ΕΞΕΤΑΣΤΗΣ			ΗΜΕΡ. ΓΕΝΝΗΣΗΣ		
ΣΧΟΛΕΙΟ			ΧΡΟΝΟΛ.ΗΛΙΚΙΑ		

	1 ^η	2 ^η
1. Κυριαρχία προτίμησης χεριού	<input type="radio"/>	<input type="radio"/>

	επίδοση	κλάση			
2. Ταχύτητα συγκρότησης (λεπτή) Ακρο εκτέλεσης <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>			
αριθ. τελειών→					
Επίδοση	0-39	40-50	51-57	58-63	>63
Κατηγορία	Βελτίωση	Αναπτυσσόμενο	Μέσος όρος	Καλό	Πολύ καλό

	επίδοση	κλάση	
3. Ταχύτητα μετατόπισης σώματος	<input type="radio"/>	<input type="radio"/>	
αριθ.επιτυχημένων μετατοπίσεων→			
Επίδοση	0-6	7-12	>13
Κατηγορία	Βελτίωση	Μέσος όρος	Πολύ καλά

	επίδοση	κλάση	
4. Ταχύτητα κίνησης σώματος με αλλαγή κατεύθυνσης και ακρίβεια χειρισμού	<input type="radio"/>	<input type="radio"/>	
χρόνος σε δευτερόλεπτα→			
Επίδοση	≥15.59	13.00-15.58	≤12.59
Κλάση	Βελτίωση	Μέσος όρος	Πολύ καλά

προσπάθειες →		1 ^η	2 ^η	επίδοση	κλάση
5. Ισοροπία κατά το βάδισμα προς τα πίσω (αδρή)	αριθμός έγκυρων βημάτων →	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Επίδοση	0-3	4-8	9-12	13-16	>17
Κατηγορία	Βελτίωση	Αναπτυσσόμενο	Μέσος όρος	Καλά	Πολύ καλά

«ΔΕΚΑ» (Καρπός, Βενετσάνου, Γαβριηλίδου, 2018)

Φύλλο καταγραφής επίδοσης

προσπάθειες→	2μ					3μ					επίδοση	κλίση
	1	2	3	4	5	1	2	3	4	5		
6. Στόχευση με το χέρι Άκρο εκτέλεσης <input type="checkbox"/>	<input type="radio"/>											
Επίδοση	0-2		3-5			>6						
Κλίση	Βελτίωση		Μέσος όρος			Πολύ καλά						

7. Ακρίβεια και συγχρονισμός χεριών (λεπτή)					επίδοση	κλίση ⁷	
Αριθμός νομισμάτων→					<input type="radio"/>	<input type="radio"/>	
Επίδοση	0-15		16-21		22-26		>27
Κλίση	Βελτίωση		Αναπτυσσόμενο		Μέσος όρος		Πολύ καλά

8. Ευκαμψία-σχήμα σώματος (αδρή)				Σταθμένα	επίδοση	κλίση ⁸
				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Επίδοση	0		1		3	
Κλίση	Βελτίωση		Μέσος όρος		Πολύ καλά	

προσπάθειες→	1 ^η	2 ^η	3 ^η	4 ^η	5 ^η	επίδοση	κλίση ⁹	
9. Υποδοχή-πίεσιμο αντικειμένου με τα χέρια	οιστό λάθος	<input type="radio"/>	<input type="radio"/>					
Επίδοση	0		1-2		3-4			5
Κλίση	Βελτίωση		Αναπτυσσόμενο		Μέσος όρος			Πολύ καλά

προσπάθειες→	χαμηλό εμπόδιο		ψηλό εμπόδιο		επίδοση	κλίση ¹⁰	
	1 ^η	2 ^η	1 ^η	2 ^η			
10. Αλτική ικανότητα (αδρή)	οιστό λάθος	οιστό λάθος	οιστό λάθος	οιστό λάθος	<input type="radio"/>	<input type="radio"/>	
Επίδοση	0-1		2-3		4-5		6
Κλίση	Βελτίωση		Αναπτυσσόμενο		Μέσος όρος		Πολύ καλά

*Σε όλα τα τεστ σημειώστε με - όταν ο εξετιζόμενος αδυνατεί να ολοκληρώσει οιστό το τεστ